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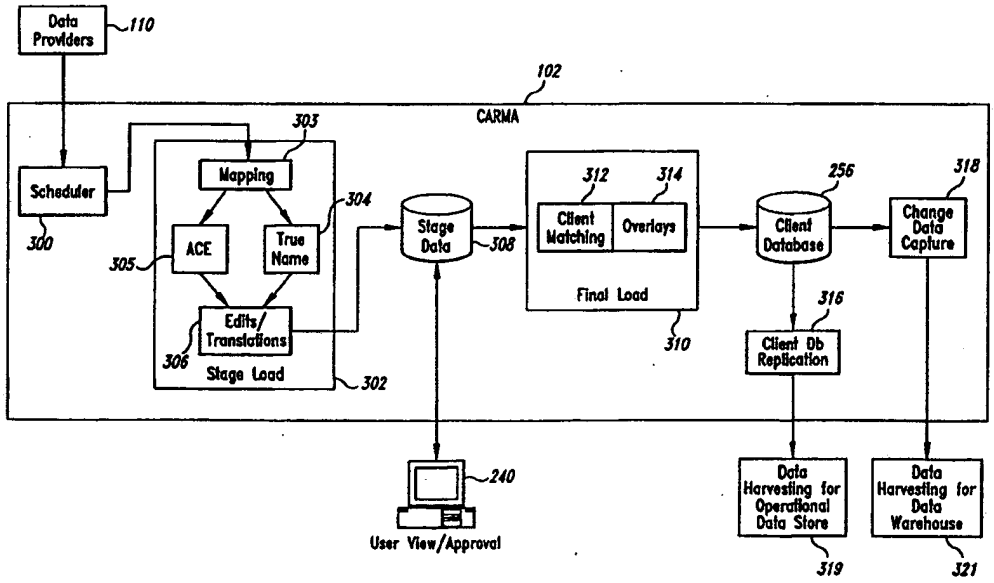

(57) Abstract

An automated marketing system provides a full range of services for telemarketing support. The automated marketing system may include a client profile management system for obtaining data from multiple data providers in different formats and integrating the data into a standardized client profile database. The automated marketing system includes a data warehouse for storing large amounts of data regarding potential clients. An automated lead generation system processes the data in the data warehouse to generate leads that fulfill certain characteristics corresponding to given marketing campaigns. These leads may be passed to telemarketers who use the leads. The results may be fed back into the automated marketing system to update lead generation strategy and to update client data that is stored by the automated marketing system.

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STRATEGIC MARKETING SYSTEM

TECHNICAL FIELD

The present invention relates generally to telecommunications systems, and more particularly, to a strategic marketing system for telemarketing.

BACKGROUND OF THE INVENTION

Telemarketing direct mail and direct sale have become more widespread in recent years. A diversity of businesses are employing marketing to sell their goods and services. One of the goals of such marketing is to establish new customers so as to expand the customer base of a business. These businesses desire to target potential customers who are most likely to be effectively solicited by marketing campaigns and contacts.

Conventional systems identify potential customers for contact by telephone numbers or addresses. In general, batches of telephone numbers or addresses are placed on contact lists and mass calling mailing or visiting campaigns are performed. Unfortunately, such mass campaigns are not very effective in that they generally have high failure rates. In addition, such campaigns utilize a large volume of resources.

In conventional systems, customer data, including telephone numbers and customer names, are typically stored in a large centralized database. Some conventional calling campaigns query the database for customers based on their telephone numbers (*e.g.*, area code and/or three digit prefix). In conventional calling campaigns, new marketing strategies and campaigns are formulated which query the database for certain criteria related to phone number records in the database. Since the database is centralized and very large, such queries consume significant processing time and are therefore quite time-consuming. Furthermore, results from such queries are often difficult to effectively employ in a given mass calling campaign. Moreover, marketing strategies and campaigns are limited to types and organizations of data within the database.

SUMMARY OF THE INVENTION

In accordance with a first aspect of the present invention, an automated marketing system includes a client profile management system for managing client profiles. The client profiles contain information about clients for marketing contact. The automated marketing system also includes a data warehouse system for storing data regarding clients. Lastly, the automated marketing system includes a contact infrastructure for querying the data warehouse to automatically generate leads of clients to contact by telemarketers. The querying entails filtering data in the data warehouse to ensure that the generated leads are for clients that include certain characteristics.

In accordance with another aspect of the present invention, a computer-implemented method is practiced in an automated marketing system that has stored data regarding potential clients. A lead generator is provided for generating leads of potential clients to contact by telemarketers from the stored client data. The lead generator is used to generate leads for a first marketing campaign. Results of contacting the generated leads are obtained, and the results are used to generate leads that lead generator for a second marketing campaign.

In accordance with an additional aspect of the present invention, a method is practiced in an automated marketing system such that client information regarding potential clients for telemarketing contact is provided on a per-client basis. The client information is queried to generate a list of leads for telemarketing contact. Each lead is associated with a potential client and contains contact information for the potential client that fulfills a first set of characteristics. The leads are then forwarded to telemarketers.

BRIEF DESCRIPTION OF THE DRAWINGS

A preferred embodiment of the present invention will be described below relative to the following drawings.

Figure 1 is a block diagram illustrating the strategic marketing system (SaMS) infrastructure that is suitable for practicing the preferred embodiment of the present invention.

Figure 2 is a block diagram of a contact service infrastructure (CONI).

Figure 3 is an exemplary data structure diagram of a lead record.

Figure 4 is an exemplary data structure diagram of a lead distribution record.

Figure 5 is a block diagram of a computer system that is suitable for running CARMA.

Figure 6 illustrates the logical organization of the client database.

Figure 7 illustrates data flows within CARMA.

Figure 8 is a flowchart illustrating the steps that are performed to process data by CARMA.

Figure 9 is a flowchart illustrating the steps that are performed to apply matching rules by CARMA.

Figure 10 is a diagram that illustrates the different categories of rules that are found within the match rule table of CARMA.

Figure 11 is a diagram that illustrates the different types of overlay rules that are found in CARMA.

Figure 12 is a data flow diagram illustrating the data flow for the SaMS infrastructure.

DETAILED DESCRIPTION OF THE INVENTION

The preferred embodiment of the present invention provides a strategic marketing system (SaMS) for providing complete marketing services for business clients. The preferred embodiment of the present invention is especially well adapted for telemarketing. SaMS provides automated data collection, client management, inventory analysis, decision support, lead generation, campaign management, order fulfillment and provisioning, customer tracking and other strategic marketing services. SaMS provides automated feedback of client contacts results for updating client profiles. The feedback is also used to generate new marketing leads, to formulate new marketing campaigns and to restrict future client contact, in some instances.

The marketing strategies developed with SaMS are directed towards individual clients rather than telephone numbers. A telephone number constitutes a property of a client. SaMS includes a database for maintaining client profile information and large quantities of information regarding clients may be received from numerous different sources. The data may be received in multiple formats and may be of a number of different types. The information on clients is utilized to analyze strategic marketing trends and to establish population profiles. Enhanced marketing campaigns can be conducted using these trends and profiles. As a result, customer leads may be generated that have a higher success rate and greater efficiency than conventional systems.

1. System Overview

Figure 1 shows an exemplary information system architecture for SaMS 100. The various components of the SaMS Infrastructure 100 interact cooperatively as shown in Figure 1 to provide many targeted marketing functions, such as those described herein. The SaMS infrastructure 100 performs at least three functions: client management, information management, and contact services.

"Client management" includes the process of identifying, tracking and managing clients. "Clients" include both current customers and potential customers or leads, and therefore many businesses may have hundreds of millions of clients. Client management involves obtaining and maintaining descriptive behavioral data about clients as individuals. A primary component in the SaMS Infrastructure 100 for client management is the Client Acquisition and Retention Management Architecture (CARMA) 102. CARMA 102 is preferably a software system that provides a database and data processing for client management. An exemplary embodiment of CARMA 102 is described in more detail below.

"Information management" is the process of collecting, storing, and managing data that reflects entire client populations and trends. Information management provides decision support functions and tools that place raw data in context for product and marketing strategies. Information management deals

with descriptive behavioral data about generalized client populations. A primary component for information management is a Decision Support System (DSS) 104. The DSS 104 consists of a large-scale data warehouse, along with processes for collecting, storing, managing, distributing, and analyzing data. In general, a "data warehouse" is a consolidation of information for many departments or "Business Strategy Units" within a company, as well as information extracted from outside of the company. An exemplary embodiment of the DSS 104 is described below with respect to Figure 12.

"Contact services" take conclusions drawn from data warehouse queries and use them to formulate marketing campaigns and to generate leads. This process also tracks and manages all contacts made with clients. CONI 106 provides contact services for the SaMS infrastructure 100. CONI 106 is preferably a software system that uses data extracted from the data warehouse of the DSS 104, along with specific strategies formulated by a company's Business Strategy Units to generate leads. CONI 106 interfaces with a Centralized Lead Repository (CLR) 108 to manage and track contacts with clients or leads, as described below.

Information regarding such contacts made with clients are fed back to the client management function of the SaMS infrastructure 100. As a result, the client management, information management, and contact services functions of the SaMS infrastructure 100 is a cyclic process: the information management function puts raw data into context to perform research, draw conclusions and form strategies; the contact services function formalizes and implements marketing strategies based on the research, conclusions and strategies produced under the information management function; and the client management function identifies and tracks individuals, collects descriptive and behavioral data, and provides such data back to the information management function.

Various data providers 110 provide data to both CARMA 102 and DSS 104. The data providers 110 include any source of data input to the SaMS Infrastructure 100 to provide information on clients. The data providers 110 consist of both internal data sources 112 and external data sources 114. Examples of internal data sources 112 include data feeds from billing systems,

customer order entry systems, order provisioning systems, customer databases, marketing databases, customer service systems, accounts receivable systems, and many others. They may also include input from other components of the SaMS infrastructure 100, such as the CLR 108. Examples of external data sources 114 include files of telephone directories, U.S. Post Office directories, credit company reports, and many third party data products that provide specific data on people. These third party data products may include information such as products people buy, where people move to and from, services people utilize, and results from telephone surveys on people's interests and needs. External data sources 114 may also an airlines' frequent flier programs, auto club memberships, health club memberships, travel clubs, and magazine subscriptions. These data are used to aid in tracking clients via clients' memberships and participation in other businesses.

CARMA 102 collects data about specific clients from the data providers 110, and uses the data to update client profiles. CARMA 102 then feeds any changes in client data to the DSS 104, but in a generalized form. That is, CARMA 102 does not send to the DSS 104 specific clients' names and addresses, but rather, sends information that reflects generic clients' profiles. CARMA 102 sends a unique client identifier with client profile changes, so that when leads are generated from data in the DSS 104, they can be matched to a specific name, address, and telephone number. In general, clients are typically identified under the SaMS infrastructure 100 based on their client identifiers, which are unique numeric or alphanumeric codes associated with each client. Client identifiers are maintained in CARMA 102 and the DSS 104.

The DSS 104 also collects data from the data providers 110. The DSS 104 typically collects data unrelated to specific clients, but rather groups of clients. Such data may include the number of people who moved from one state to another, the number of people who purchased both a car and home stereo in the same year, or the number of women who own a business and are members of a political party. The possibilities for data collection by the DSS 104 are numerous, and vary according to the business needs of the user of the SaMS

infrastructure 100. The DSS 104 also collects data from CARMA 102, and other sources, as described below.

The DSS 104 allows Business Strategy Units (BSU) 116 to access data stored in its data warehouse. A BSU 116 can be a subset of a company responsible for formulating business, marketing, and sales strategies. For example, one BSU 116 can be responsible for international clients, while another BSU 116 can be responsible for domestic clients. Alternatively, the BSU 116 can be the entire company employing the SaMS infrastructure 100.

Users or BSUs 116 access the data stored in the DSS 104 for various functions, including data survey, data mining, data drilling, predictive modeling, general queries and results delivery. The data survey function helps the BSU 116 to identify potentially valuable groups of data. The data survey function helps the BSU 116 find unanticipated patterns to guide marketing decisions. For example, a survey of a data mart 388 (described below) may discover that 80% of a population in the northeast and with incomes of greater than $50,000 use cellular service. The BSU 116 can thereafter determine why income and geographic characteristics lead to cellular usage.

The data surveying function helps identify and classify large segments of data. The data mining and data drilling functions qualify these large segments of data to further identify and quantify business opportunities. Once a significant pattern has been established, the pattern can be represented as a mathematical model that establishes the correlation between certain characteristics (*e.g.*, income over $50,000, northeastern U.S. population, etc.) to other characteristics (*e.g.*, cellular users). From these models, the BSU 116 can create mailing lists of candidates for a cellular direct mail campaign.

The general query function allows the BSU 116 to perform simple queries of data in the data marts via a DSS user interface process. For example, the BSU 116 can query the data mart for the total sales in a given year. The results delivery function allows the DSS 104 to deliver data in numerous ways, such as formatted reports, three-dimensional graphics, etc.

Each BSU 116 performs strategic queries of data in the data warehouse of the DSS 104, using certain analytical tools. From the results of

these queries, the BSU 116 formulates marketing campaigns. The BSU 116 then uses CONI 106 to implement the selected marketing campaign. As described more fully below, the BSU 116 specifies to CONI 106 criteria to use in extracting lead data from the DSS 104. Lead data is used to identify client leads, which are clients to be targeted in the selected marketing campaign. A "lead" is typically a client who is a potential customer of the company. Each lead is identified by a corresponding, unique client identifier stored in the DSS 104. CONI 106 then generates leads or lead records by matching these client identifiers with a name, address, and/or telephone number obtained from CARMA 102 via an operational data collection/distribution process of DSS 104, described below with respect to in Figure 3.

When CONI 106 generates lead records, it places these records in the CLR 108. The CLR 108 is a database, smaller than the data warehouse of the DSS 104, used to track leads and activities performed on leads. The CLR 108 stores both lead records and lead distribution records. Each lead record, stored in the CLR 108, includes fields for client identifier, telephone number, address identifier number, and perhaps a field for previous contact. Figure 3 shows an exemplary, more detailed, lead record constructed under Informix, showing numerous, generally self-explanatory fields. The CLR 108 preferably stores only one lead record per client. The CLR 108 also stores lead distribution records. More than one lead distribution record can be associated with each lead record. Figure 4 shows an exemplary, more detailed, lead distribution record constructed under Informix, showing numerous, generally self-explanatory fields. Each lead distribution record includes fields for identifying certain TM/DM centers 118, a number of records descend to each center, dates, priority codes, etc.

The lead records generated by CONI 106 and stored in the CLR 108 are distributed by CONI to one or more Telemarketing/Direct Mail Centers (TM/DM centers) 118. The TM/DM centers 118 include call centers from which telemarketing agents perform client contacts, sales, and services over the phone. Often, a TM/DM center 118 is located in each "sales city" in which marketing campaigns are conducted. However, the TM/DM centers 118 can conduct marketing campaigns outside of the cities in which they are located.

The TM/DM centers 118 may also include centers from which direct mail campaigns are conducted. While the present invention is generally described below with respect to a telemarketing campaign performed at the TM/DM center 118, those skilled in the relevant art will readily recognize that the embodiment of the present invention is equally applicable to direct mail campaigns. Additionally, the present invention is equally applicable to other methods of contacting clients, either physically or electronically, such as via e-mail or Internet contact.

Agents at the TM/DM center 118 use the lead records provided to them by CONI 106 to call or contact clients and perform sales and/or service functions. The agents input the results of these contacts to the TM/DM center 118, which forwards the results to CONI 106. CONI 106 provides information from these results back to both CARMA 102 and the DSS 104 as a data provider 110. For example, if a client is contacted to market to them long distance service, but the client indicates they prefer to switch their local phone service provider instead, an agent records this indication in a file at the TM/DM center 118. A file of all clients who prefer to switch their local phone service provider is then fed, as a data provider 110, to CARMA 102 and the DSS 104. CARMA 102 uses this information to update the profile of each client included in the file to indicate this client is interested in switching their local service provider. This information is then fed from CARMA 102 to the DSS 104, in the form of a client identifier and an indicator that represents an interest in switching local service providers, which is stored therein.

The DSS 104 can also receive information directly from the TM/DM center 118 (as a data provider), via CONI 106, indicating how many people in a particular city, for example, are interested in switching their local service provider. From this information, the BSU 116 can query the DSS 104 to determine if enough interest exists in a certain city to formulate a local service provider marketing campaign in the city. CONI 106 can then generate leads for the local service provider campaign. The above example represents one of many feedback loops within the SaMS infrastructure 100.

When an agent at the TM/DM center 118 signs up a new customer or makes a sale, the agent inputs an order directly into a customer order entry system 120. The customer order entry system 120, in addition to recording and provisioning the order, provides update data to the DSS 104 to indicate the results of, or information surrounding, the order. For example, if the order is for long distance service, the customer order entry system 120 updates the DSS 104 to indicate this client now subscribes to long distance service.

The order for long distance service is also provided to National LEC Interface System (NLIS) and Quick Preferred Interexchange Carrier (PIC) systems 122. The NLIS and Quick PIC systems 122 provide the order to the client's Local Exchange Carrier (LEC) 124 so that the LEC can convert the client's PIC at the appropriate local switch. The NLIS and Quick PIC systems 122 are described in detail in U.S. Patent Application entitled "System and Method for Real Time Exchange of Customer Data Between Telecommunications Companies," (COS-96-069) and assigned to a common assignee of the present application. The architecture of the TM/DM centers 118, customer order entry system 120, and NLIS and Quick PIC systems 122 enable the processes of contacting a client, selling long distance service to that client, recording and provisioning the order for long distance service, and converting the client's PIC at the LEC 124 switch to all occur within only a few minutes.

The NLIS and Quick PIC systems 122 also provide data to the DSS 104 for unsolicited PIC conversions. If customers of a long distance company switch to another company, their PIC conversions will be provided by the LEC 124 to the NLIS and Quick PIC systems 122. The NLIS and Quick PIC systems 122 provide files of these conversions to the DSS 104. The DSS 104 in turn stores them, and allows CONI 106 to extract all recent PIC conversions and generate leads for a customer win-back campaign.

2. CONI

Referring to Figure 2, an exemplary internal architecture of CONI 106 is shown. CONI 106 provides a graphical user interface (GUI) 160 for users to interact with CONI in at least two ways: to construct lead marts and to

perform queries or searches within such constructed lead marts. Considering first the query of lead marts, users such as a BSU 116 of the company, use the GUI to translate a marketing strategy into a marketing campaign.

The BSU 116 first specifies criteria for targeting clients. For example, from a prior analysis performed on data in the data warehouse of the DSS 104, the BSU 116 may determine that people who have recently moved from California to Colorado, and have purchased a car in the past year, are likely to subscribe to cellular service and switch their long distance provider. As a result of this determination, the BSU 116 wishes to offer a long distance and cellular service package to these people under a telemarketing campaign. The BSU 116 uses the GUI 160 to input and specify that it wants to pull records of all clients who have (1) moved from California to Colorado, (2) have purchased a car in the past year, and (3) are not currently both long distance and cellular customers of the company.

A campaign management process 162 receives the input data or criteria from the GUI 130 and translates such criteria into a lead qualification filter or file. For example, the campaign management process 162 builds a query from the input criteria using structured query language (SQL) statements. A query to produce a list of lead records is generally described herein as a "marketing campaign," as described below.

A lead qualification filter process 164 receives the constructed lead qualification filter from the campaign management process 162 and applies such filter to data in the data warehouse of the DSS 104 (or in a lead mart 166) (discussed below) to extract a list of clients which meet the criteria specified by the lead qualification filter. The lead qualification filter process 164 employs the lead qualification filter to extract client records as "lead records" for a given marketing campaign, and stores such lead records together in a lead mart 166 (described below).

In the previous example, the lead qualification filter may first extract a first lead list of all client identifiers for clients who have moved from California to Colorado, then from this first list extract a second lead list of all clients who have purchased a car in the past year. From this second list, the lead

qualification filter then extracts a third, smaller lead list of all clients who are not currently both long distance and cellular customers of the company. The lead qualification filters may also extract other undesirable leads, such as clients who have requested to not be contacted ("suppressions") or clients whose age is greater than 100 (*i.e.*, probably deceased).

In general, queries and retrieval of selected data from databases, data marts, and data warehouses under the exemplary embodiment of the present invention are performed using known database querying and retrieval techniques, such as using SQL statements and open database connectivity (ODBC), as is known by those skilled in the relevant art.

The lead qualification filter process 164 also constructs lead marts 166 in which to store the data extracted from the DSS 104 based on certain lead qualification filters. "Lead marts" 166 are databases, smaller than the data warehouse, which contain subsets of data from the data warehouse. In general, the lead marts 166 are customized collections of data extracted from the DSS 104 for individual BSUs 116. As is described herein, the BSUs 116, in turn, query the lead marts to develop specific client lists for a given marketing campaign.

Each lead mart 166 is typically a single-subject database used by individual groups of users, such as individual BSUs 116 in the company. Examples of such lead marts 166 for a long distance company, in a preferential order, can be a lead mart storing data of all customers of international alliances on partner programs (*e.g.*, frequent flyer programs), a lead mart storing data of all customers who make frequent international calls to non-English-speaking countries, a lead mart with all customers who make frequent international calls to English-speaking countries, a lead mart of all previous customers who have recently switched to another long distance company, and a mass market lead mart of all customers of a particular service. These common lead marts 166 can be used to manage ongoing marketing campaigns. For example, a lead mart 166 of all previous customers who have recently switched to another long distance company would be very useful for managing an ongoing customer win-back campaign. The lead marts 166 may be embodied in a separate computer, such as a Sun Dox, manufactured by Sun Microsystems, but do not need to be.

In the exemplary embodiment, the lead qualification filter process 164 provides a preferential order or hierarchy of lead marts 166 so that a given client is not identified in more than one lead mart (and thus not contacted repeatedly under various marketing campaigns). For example, the lead mart 166 of customers of international alliances/partnerships has a higher ranking than the lead mart of customers who make international calls to English-speaking countries.

The lead qualification filter process 164 can be setup to perform nominal or periodic processing. For example, the lead qualification filter process 164 can be created to perform repeated data extraction from the DSS 104 based on a previously created lead qualification filter. Thus, on a periodic basis (*e.g.*, daily), the lead qualification filter process 164 periodically queries and extracts client records from the DSS 104 (via data warehouse shipping (described below)) that satisfy the lead qualification filter, and updates the corresponding lead mart 166. Thus, the lead marts 166 continuously have currently updated data stored therein.

The user or BSU 116 also uses the GUI 160 to input data or lead inventory specifications for creating specific client lists for implementing a given marketing campaign. For example, the user may input data to the GUI 160 specifying how many lead records are to be formatted each day, to which TM/DM centers 118 certain lead records should be distributed, etc. A lead inventory management process 167 receives such input data from the GUI 160 and uses the data to manage the extraction of and processing lead records from the lead marts 166. Thus, in a manner similar to that for the lead qualification filter process 164, the lead inventory management process 167 constructs a query based on data received from the GUI 160 and extracts lead records stored in one or more of the lead marts 166 based on a given marketing campaign to produce a "lead list" or list of lead records selected based on the given marketing campaign. The lead inventory management process 167 stores the resulting lead list and corresponding lead records in the CLR 108.

While the lead list typically includes a list of lead records, each lead record includes not only the client identifier for a given lead, but also

additional information regarding the client, such as a number of times, and associated dates, when the client was contacted, and a code number corresponding to a marketing campaign during which the client was contacted. Generally, leads or clients can be tracked within CONI 106 based on a marketing campaign code created when a marketing campaign is created. Furthermore, the lead inventory management process 167 stores lead distribution records for each marketing campaign. The lead distribution records identify which TM/DM center 118 a given lead record is to be distributed (or has been distributed). More than one lead distribution record can be associated with one lead record, since a client under the lead record can be associated with more than one marketing campaign. The lead inventory management process 167 creates lead distribution records for the given marketing campaign which specifies how many lead records are to be formatted each day, to which TM/DM centers 118 certain lead records should be distributed, etc.

The lead inventory management process also performs certain screening processes such as ensuring that duplicate client records are not retrieved and stored in the CLR 108. The lead inventory management process 107 ensures that a given client is not identified in two separate marketing campaigns (and thus is not called twice). The lead inventory management process 167 flags each client identified under a lead list in the CLR 108. If a subsequent lead list identifies a client already flagged in the CLR 108, the lead inventory management process 167 compares a hierarchy or rating of the new lead list to that of the former lead list which previously flagged the given client. If the subsequent lead list has a higher ranking than the prior lead list, then the client is flagged for the new lead list. Thereafter, the lead inventory management process, via a formatter (described below), cancels a lead record previously forwarded to the TM/DM center 118 under the prior lead list. Thus, the lead inventory management process 167 can dynamically adjust ongoing marketing campaigns so that more successful campaigns (higher priority campaigns) preside over and accumulate clients from other campaigns.

In general, CONI 106 provides two types of data retrieval granularity to the BSUs 116. Under a coarse granularity, the BSU 116, through

the GUI 160, campaign management process 162 and lead qualification filter process 164, extract a subset of client data from the DSS 104, and stores such data in a lead mart 166. In a finer granularity process, the BSU 116, through the GUI 160 and processes 162 and 164, develop a subset of client data stored in a lead mart 166 to produce lead lists and extract lead records for certain marketing campaigns.

Summarizing, the campaign management process 162 creates lead qualification filters based on queries or criteria input by the BSU 116. The lead qualification filter process 164, in turn, implements such created lead qualification filters to extract the appropriate data from the DSS 104 (to construct lead marts 166) or from the lead marts (to construct lead lists). The campaign management process 162 provides an interface between the GUI 160 and the lead qualification filters process 164, while the lead qualification filters process interacts with the databases/data warehouses.

A formatter process 168 receives client data that is extracted from the CLR 108 and DSS 104 based on a lead list for a given marketing campaign. The formatter process 168 matches the client identifier of each entry in the lead list with a name, address (if for a direct mail campaign), and telephone number (if for a telemarketing campaign) to create an appropriate lead record to be ultimately used to contact the client. The formatter process 168 obtains the name, address, and telephone number assignments for client identifiers from CARMA 102 via the DSS 104. As shown in Figure 3, the DSS 104 includes an operational data store (described below) that extracts this information from CARMA 102 and feeds it to CONI 106.

The formatter process 168 formats the resulting leads into lead records, and lead distribution records that include an identification and address of specific TM/DM centers 118 to which each lead record is to be distributed; this information is provided by the lead inventory management process 167. The formatter process 168, in the exemplary embodiment, is table driven, and thus employs definition files, similar to templates. Such definition files specify the location of data retrieved by the formatter process 168 for display to agents at the TM/DM centers 118. For example, the definition file can specify that column 1

include phone numbers, column 2 include names, etc. By being table driven, the formatter process 168 does not require underlying code to be changed if a given lead record format is to be changed. Instead, only the definition file needs to be changed in order to change the way in which data extracted from the DSS 104 is displayed to agents at the TM/DM centers 118.

The TM/DM centers 118 receive formatted lead records from the formatter process 168. Agents at the TM/DM centers 118 then contact clients identified in such records and record the results of such contacts.

A contact management process 169 receives the results of the contacts from the TM/DM centers 118. In the exemplary embodiment, the results of such contact consist of, or include, certain predetermined codes. Such codes indicate whether a client is to be a suppression, whether the client is to be contacted again and at what time, and any changes to be made to the client's profile. Thus, the contact management process 169 arranges a follow-up with a lead if needed, updates stored data, etc. The contact management process 169 forwards the code and or information to the data warehouse of the DSS 104 for storage. The contact management process 169 thereby provides feedback on the results of the marketing campaign. The feedback provided by the contact management process 169 provides historical information to CONI 106. Such historical data can be accessed, via CONI 106, by the BSU 116 to determine how successful a given marketing campaign is. The BSU 116 can then modify a given marketing campaign to help improve its success, if needed.

The CONI 106 is described in more detail in co-pending application entitled "System And Method For Automated Lead Generation In Client Contact Management For Sales And Marketing Platform," which was filed on even date herewith, which is assigned to a common assignee with the present application and which is explicitly incorporated by reference herein.

3. CARMA

CARMA 102 may be run on a number of different types of computer systems. Figure 5 is a block diagram illustrating a computer system 240 that is suitable for running CARMA 102. A mid-range computer that

employs the DEC Alpha processor from Digital Equipment Corporation of Maynard, Massachusetts, is suitable for running CARMA 102. Computer system 40 includes a central processing unit (CPU) 242 that is responsible for overseeing operation of the computer system. The computer system 240 may include a number of peripheral devices, such as a video display 244 and an input device 246. The computer system 240 may also include a network adapter 248 for interfacing the computer system with a local area network. A modem 250 may be provided in the computer system 240 to facilitate communications with remote computing resources over conventional telephone lines. The computer system 240 may include a number of different types of storage 252, including primary storage and secondary storage. The storage 252 holds a client database 256 and a copy of the program code 254 for CARMA. Those skilled in the art will appreciate that the computer system 240 may be alternatively a multiprocessor system or a distributed system. The present invention is not limited to being practiced on a single processor system.

The client database 256 has a logical architecture like that depicted in Figure 6. The client database 256 contains a number of different tables, where each table contains different information regarding a client. Each client is assigned a unique client identifier (client_id). This client identifier links information that is kept in the different tables about the client. The linked records for a client in aggregate, constitute the client profile for the client. The three primary tables in the client database 256 are the client table 260, the address table 282, and the domestic phone table 290. Each record in the client table 60 contains information about a client, such as client ID, social security number, name, and professional title. The address table 282 holds information about the client's address, whereas the domestic phone table 290 holds information regarding a client's phone number and phone service.

It should be appreciated that there may be a one to many relationship between the client table 260 and the address table 282, as well as between the client table 260 and the domestic phone table 290. A client may have multiple addresses and multiple phone numbers associated with it. Each of the addresses has a separate record in the client address table 280 and each of the

domestic phone numbers has a separate record in the domestic phone table 290. The client table 260 and the address table 282 are linked by an intermediate table: the client address table 280. Each address of a client has a record in the client address table 280 that is linked to the client table 260 by "cInt_idr". Each address has a status indicator ("adr_stat") within the client address table 280. The address status indicator may have a value of "active" or "obsolete." This status indicator is useful in tracking a client as a client moves among addresses. An address identifier ("adr_id") is held in the client address table to link the record and the client address table to the address record in the address table 282.

The client phone table 276 serves as an intermediate table between the client table 260 and the domestic phone table 290. For each phone number or client, the client phone table 276 contains a phone number in three fields: "npa," "nxx," and "line."

Suppression tables are also provided for the intermediate tables (*e.g.*, the client address table 280 and the client phone table 276). In particular, the client address supp table 284 holds suppression information regarding a client address. Similarly, the client phone supp table 288 holds suppression information regarding a client phone number. The phone supp table 292 holds suppression information regarding records stored within the domestic phone table 290. Analogously, the address supp table 288 holds suppression information for records stored in the address table 282. Household enhancement information is stored within the address enhancement table 286. Enhancement information for clients may be stored in the client enhancement table 274.

A client account table 266 tracks internal account numbers for the client. There may be a one to many relationship between the client table 260 and the client account table 266. In other words, information about multiple accounts may be stored for a given client.

A client member table 270 tracks a client's memberships in affiliate clubs, affinity clubs, and various other clubs. Examples include airline frequent flyer clubs, professional organizations, auto clubs, credit cards, travel clubs, health clubs, and the like. There may be relationships between records in the client member table 270 and records in the client table 260.

The client prov detail table 272 holds detailed audit information regarding the service provider, such as a client's phone number, address and name, as provided by each source. The client enhancement table 274 holds enhancement information regarding clients. The client language table 278 holds information regarding the natural language that the client speaks and/or understands. Multiple client language records may be provided for a single client. The client list table 262 serves as an intermediate table for linking a client as identified by a client identifier with a list record in the list table 261 which defines all sources (lists) by which a client has been received.

As was mentioned above, CARMA 102 is able to process input data for multiple data sources and to update the data in the client database 256 accordingly. This process of handling new input data will be described below relative to Figures 7 and 8. New input data is processed in load transactions. Initially, the raw input data is received at CARMA 102 from the data providers 110 (step 320 in Figure 8). As was mentioned above, the data providers may be both external and internal and may provide a variety of different types of information. A scheduler 300 is responsible for invoking the respective stages of processing performed by CARMA 102. The scheduler 300 initiates and monitors the data load process upon receipt of the data. The scheduler initially causes formatting and data hygiene to be performed on the raw input data (step 322 in Figure 8). This formatting and data hygiene is performed by a stage load process 302 (Figure 7). The stage load process 302 performs standardization of names and addresses of clients. The stage load process ensures that client identification (in the form of a name, social security number, or other common identifier) is valid and that certain information, such as mailing address, is valid and in a proper format.

In the preferred embodiment of the present invention, CARMA 102, PostalSoft's TrueName 304 product and the ACE product 305. Mapping mechanism 303 determines which of the products 304 and 305 are used or input data. TrueName 304 standardizes, parses, corrects, translates, appends, and validates name/address information in the data input from the data providers 110. In general, PostalSoft parses all billing names and address information into

standard name and address database attributes. ACE 305 also performs standard billing address append functionalities, such as the identification and attachment of full nine digit zip codes, carry routes, geographic match codes, and check digits for bar-coding. Street suffix values unit designators are also standardized by TrueName. TrueName 304 maintains a reference list of first names and associates a gender code with each first name (*i.e.*, male, female).

The preferred embodiment of the present invention also includes a number of custom coded edits or translations 306 that embellish the PostalSoft product 304. For example, the name information is always placed at the beginning of the output. Invalid characters are not permitted in names and extra blanks are eliminated in names and addresses. Literals such as "in care of" or "attention of" are deleted. Repeated names within first name fields and last name fields are deleted. Invalid names are eliminated. This may include the elimination of profanity and repetitive characters. The name components of input are removed if the hygiene score is below a predefined threshold value.

Stage load process 302 outputs the validated standardized data to an interim data store 308. This enables a user to view and approve the data using the computer system 240 before the data is passed on to a final load process 310. The final load process 310 performs some additional processing of the data before data is added to the client database 256.

The final load process 310 entails applying client matching algorithms 312. These client matching algorithms 312 are applied to determine if the client identification information that is provided and the data matches an existing client in the client database (step 324 in Figure 8). Figure 9 is a flow chart illustrating in more detail how the client matching rules are applied. First, critical matching criteria is examined for records in the client database 256 and information contained in the input data. Values that indicate the matching condition for each of a number of different criteria are assigned (see step 334 in Figure 9).

The critical matching criteria include a social security number matching (SSN) criteria. The value for the social security number matching criteria may be "Y", indicating that there is a match and that both the input data

and the record in the client database 256 include a populated social security field. The value may also be "N" indicating that there is no match but that the input data and the database record include a social security number value. The value may lastly be "B", indicating that one or both of the input data or the database record do not contain a social security number value.

Last names are compared to determine a value for a last name match (LNM) matching criteria. A value of "Y" for the LNM criteria indicates an exact match excluding spaces and special characters, identified misspellings, and hyphenated last names for married women. A value of "N" indicates no match and that a last name is provided both in the input data and the database record.

First names are compared in obtaining a value for a first name match (FNM) criteria. A value of "Y" indicates an exact match including equivalent nicknames, abbreviations, and identified misspellings. An exact match may also be found where the first letter of the first name, including equivalent nicknames and abbreviations, match but only if the input data or the database record has a first name as an initial. Lastly, an exact match can be found if it matches to a nickname table entry. A value of "N" indicates that there is no match and that a first name is specified in both the input data and the database record.

Middle names are compared to yield a value for a middle name match (MNM) criteria. The MNM criteria may have a value of "Y", which indicates an exact match, equivalent nicknames and equivalent abbreviations. A value of "N" indicates that there is no match and that a middle name is specified in both the input data and the database record. A value of "B" indicates that one or both of the input data in the database record are not populated with a middle name.

Gender is compared in the gender (GDR) matching criteria. A value of "N" indicates that no match is found between a male, female, or company genders in both the input data and the database record. A value of "A" indicates that the input data or the database record is populated with an ambiguous gender value. A value of "M" indicates that both the input data and

the database record are populated with male gender codes. A value of "F" indicates that both the input data and the database record are populated with female gender codes. A value of "C" indicates that both sources are populated with company gender codes.

Titles of clients are compared to yield a value for the title (TTL) matching criteria. A value of "Y" indicates an exact match on a courtesy title or match of equivalent ambiguous values. For example, the abbreviation "Mrs." matches "Ms." A value of "N" indicates that there is no match and that both the input data and the database record are populated with courtesy titles. A value of "B" indicates that the input data or the database record or both are not populated with a courtesy title.

Zip codes are compared to yield the value for a zip code matching criteria (ZIP). A value of "9" indicates an exact match of a full nine-digit zip code. A value of "7" indicates a match on the first seven digits of a zip code. A value of "5" indicates a match on the first five digits of a zip code. A value of "N" indicates no match and that both the input data and the database record are populated with zip codes.

Street names and street suffixes are compared in the street names and street suffixes (STR) matching criteria. A value of "Y" indicates an exact match of street names and street suffixes. A value of "N" indicates no match and that both the input data and the database record are populated or that one of these two is not populated. A value of "B" indicates that both the input data and the database record are not populated with a street name or a street suffix.

An address number or P.O. Box number is compared to yield the value for the number (NBR) matching criteria. A value of "Y" indicates an exact match. A value of "N" indicates no match and that both the input data and the database record are populated by the same type of information.

Apartment numbers are compared to yield the value for the apartment (APT) matching criteria. A value of "Y" indicates an exact match. A value of "N" indicates that there is not a match and that both the input data and the database record contain an apartment number specification. A value of "B"

indicates that the input data or the database record is not populated with an apartment number.

Phone numbers are compared to yield a value for the phone number (PHN) matching criteria. A value of "Y" indicates an exact match of phone numbers. A value of "N" indicates that there is not a match and that both the input data and the database record contain phone numbers. A value of "B" indicates that either the input data or the database record do not contain a phone number.

Account numbers are compared to yield the value for the account number (ACC) matching criteria. A value of "Y" indicates an exact match where both the input data and the database record are populated with an account number. A value of "N" indicates that the input data and the database record contain account numbers and that there is no match between the account numbers. A value of "B" indicates that one or both of the input data and the database record are not populated with an account number.

Membership numbers are compared to yield a value for the membership number (MEM) criteria. A value of "Y" indicates an exact match on a specific membership number. A value of "N" indicates that there is no match and that both the input data and the database record are populated with the same type of membership number. A value of "B" indicates that one or both of the input data and the database record are not populated with the membership number.

Client_id's may be compared to yield a value for the client_id matching criteria. A value of "Y" indicates an exact match where both the input data and the database record are populated with client_ids. A value of "N" indicates that there is no match and that both the input data and the database record are populated with client_ids. A value of "B" indicates that one or both of the input data and the database record are not populated with a client ID.

It should be noted that each of these matching criteria may also assume a value of "-" indicating that the determination of whether there is a match or not is not dependent upon that criteria.

The values are utilized by applying match rules using a match rule tables to determine if there is a match (step 336 in Figure 9). An example of match rule is as follows:

1	2	3	4	5	6	7	8	9	10	11	12	13	14	scenario	result-rule
-	Y	Y	Y	M	B	Y	Y	Y	Y	-	-	-	-	00113	MATCH
-	Y	Y	Y	M	B	Y	Y	Y	N	-	-	-	-	00114	MATCH
-	Y	Y	Y	M	B	Y	Y	Y	B	-	-	-	-	00115	MATCH
-	Y	Y	Y	M	B	Y	Y	N	Y	-	-	-	-	00116	MATCH
-	Y	Y	Y	M	B	Y	Y	N	B	-	-	-	-	00118	MATCH

1 = SSN 2 = LNM 3 = FNM 4 = MNM 5 = GDR 6 = TTL
7 = ZIP 8 = STR 9 = NBR 10 = APT
11 = PHN 12 = ACC 13 = MEM 14 = CLN

Each row within the match rule table contains a scenario and a result (note the columns labeled "scenario" and "result-rule"). Each row may be considered a separate rule. Each other column specifies a particular value for one of the 14 match criteria described above (see the Legend above). If the criteria have the value specified in the columns, then the rule is fulfilled and the result of the rule is applied. For example, scenario 113 specifies that if there is a last name match (column 2 is "Y"), there is a first name match (column 3 is "Y"), there is a middle name match (column 4 is "Y"), both the input data and the database record are populated with male gender codes (column 5 is "M"), one or both the sources are not populated with a courtesy title (column 6 is "B"), there is a zip code match (column 7 is "Y"), there is a street name and street name suffix match (column 8 is "Y"), there is a number match (column 9 is "Y") and there is an apartment match (column 10 is "Y"), it is determined that the input data and the database record match. As a result, a determination is made in step 326 of Figure 8 of whether there is a match or not by applying the match rule tables.

It should be appreciated that there are a number of different combinations or scenarios within the match rule table that could be categorized

into the categories 339 set forth in Figure 10. In particular, the match rule table contains the following combinations: name and address combinations 340, name and phone combinations 342, name and social security number combinations 344, name and account combinations 346, name and membership number combinations 348, name and client ID combinations 350, address and phone combinations 352, address and account combinations 354, address and membership number combinations 356, phone and account combinations 358, phone and membership number combinations 360, and account and membership number combinations 362.

If it is determined in step 326 that there is not a match between the input data and any database records that hold client profiles, a new record may be created and a new client identifier is assigned to the client (step 328 in Figure 8). The new record is filled in with the data that is provided in the input data that has been processed by the stage load process 302.

In contrast, if a match is found, an overlay process is applied to determine how to resolve the conflict between the client information contained in the input data and the client database record (step 330 in Figure 8). In general, as will be described in more detail below, the overlay process applies overlay rules and resolution rules to determine how to resolve the conflicts and the data is updated accordingly within the client database 256 (step 332 in Figure 8). This overlay process is depicted as overlays 314 in Figure 7 and results in data that is passed to the client database 256.

Figure 11 depicts different varieties of overlay rules 364 that are provided by CARMA 102. There are client overlay rules 366. The general approach of the client overlay rules is after receiving an indication that there is a match, the name fields in the client database 256 are only updated if the input data has more complete information. The client overlay rules contain specific rules directed to fields in the client table 260. The active address overlay rules 368 specify how active address information within the client database 256 should be overlaid relative to input data that matches. The informational address overlay rules 370 specify how informational address information should be overlaid. The phone number overlay rules 372 specify how phone number

information should be overlaid. The enhancement overlay rules 374 specify how enhancements should be overlaid. The list specific database table overlay rules specify what database tables are allowed to be updated for any specific load feed. Lastly, the client_provider_detail overlay rules indicate how client provider information in the database 256 should be overlaid.

Once a client database 256 has been updated, the changes may be replicated by a client database replication process 316 and may be passed on to a data harvesting facility 380 for an operational data store 384 managed by the DSS 104. Changes are captured by a changed data capture process 318 that forwards the changes to the data harvesting facility 380 of the data warehouse 823 of DSS 104.

Therefore, CARMA 102 provides an integrated system for client profile management that provides a number of unique features. CARMA tracks individual clients as individuals for other than as telephone numbers or addresses so that multiple clients that share telephone numbers or addresses may be tracked. CARMA 102 maintains multiple relationships, including multiple addresses per client and multiple phone numbers per client. This facilitates complete tracking of clients having multiple phone numbers or addresses. CARMA 102 provides continuous ongoing tracking of clients and readily facilitates changes to client profiles. CARMA 102 includes processing resources for accepting and using input data of almost any type in any format. Still further, CARMA performs effective client matching to avoid duplicate client profiles.

4. Data Flow

Figure 12 illustrates the data flow in the SaMS infrastructure 100. Process steps or data flow in Figure 12 are identified by reference numbers 1 through 24 below and in Figure 12. The paragraphs set forth below are introduced by a number, 1 through 24, which corresponds to the data flows shown in Figure 3. Where relevant, certain hardware or processes are also described with respect to the data flows 1 through 24.

1. Client information from the data providers 110 is collected by CARMA 102. As noted above, the client information from the data providers

110 can include internal data sources such as the company's customer traffic, billing system records, client contact records, etc., as well as external data such as syndicated lifestyle information. CARMA 102 is designed to accept data in practically any format and from any source. CARMA 102 uses input client information to update client profiles in its client database.

2. Any changes to client profiles in CARMA 102 (generally a result of new client information input by the data providers 110) are captured and fed to the DSS 104. Specific client identification data, such as names and addresses, are withheld. Instead, CARMA 102 provides generic client identifiers to the DSS 104. The DSS 104 uses a data harvesting process 380 to collect and format all input data, whether from CARMA 102 or any other data provider. The data harvesting process 380 includes processes for identifying, extracting, transforming, deriving, aggregating, integrating and conducting integrity checks of data collected from the data providers 110.

The identifying process identifies what data elements within the collected data are needed for downstream processes, as well as identifying a definitive source for collected data, not necessarily the first known source. The extracting process copies appropriate data from the data providers 110. The transforming process reconciles the various ways that the same data is labeled as it is received from the data providers 110. For example, values for a client's sex under one data provider or system may be in the form of "m" or "f," while from another data provider be in the form of "1" or "2." The transforming process may instead assign a new value, such as "male" and "female."

The deriving process converts some data into another value. For example, two or more fields of data about a client may be converted to a score (*e.g.*, the address and income of a client combined and represented by a two-digit score). The aggregating process combines and summarizes data across a set of transactions or a set of individual clients. For example, the total monthly long-distance spending by a client may be aggregated over a year to provide an average monthly spending value for that client. The integration process matches data with the appropriate client number, and verifies time frames for each piece

of data. The integrity check process ensures that data stored in the data warehouse is in the appropriate form/format.

3. The data harvesting process 380 collects from various data providers 110 information for which specific client identification is not needed. This information can be used to identify general trends.

4. The data harvesting process 380 stores all the data it collects in a data warehouse 382. The data warehouse 382 may be partitioned and configured in various schemes to suit the needs of the business utilizing it. For typical businesses, such as a telecommunications company, it must be capable of storing huge volumes of data, perhaps several Terabytes. The data warehouse 382 preferably employs a massive parallel processing (MPP) platform, such as "more than 100" IBM SP2 processors. A scaleable database management system is preferably used, such as that offered by Informix Corporation.

5. and 6. A data shipping process 386 extracts specific data from the data warehouse 382 and places this data in data marts 388. The data marts 388 are smaller databases that house subsets of data from the data warehouse 380, and are used to facilitate quick and easy access to the data stored in the data warehouse. The data marts 388 each preferably employ symmetrically parallel processor (SMP). Each data mart 388 is setup for an individual customer or user of the DSS 104. For example, one data mart 388 can be established for a residential marketing BSU 116, and another data mart established for a small business group BSU 116.

A user of the DSS 104, such as a BSU 116, specifies in the data shipping process 386 what data they wish to have placed in their data mart 388 from the data warehouse 382, and when. The BSU 116 specifies such criteria via a DSS user interface process 390 (described below). The data shipping process 174, on a periodic basis, then extracts data from the data warehouse 382 under the user's specified criteria, and places this data in the user's data mart 388. Summarizing, the data shipping process 386 moves data from the central data warehouse 382 to departmental data marts 388 in a process similar to the data harvesting process 380 (*e.g.*, users can select requested elements and require additional transformations be applied to data before it is stored in the data marts).

7. and 8. The DSS user interface process 390 is a tool that provides access to and analysis of data in the data marts 388. Users, such as a BSU 116, use the DSS user interface process 390 to perform queries into the data in their data mart, under a query process similar to that described above for CONI 106. For example, the data shipping process 386 may extract from the data warehouse 382 data representing all clients who have recently moved to the United States from a foreign country, and place this data in one of the data marts 388 for the BSU 116. The BSU 116 then uses the DSS user interface process 390 to obtain a list, from this data, of all of these clients who moved to California from Japan, and have selected another long distance company.

Generally, more complex methods of analysis are used to determine what types of marketing campaigns can be successful. The BSU 116 examines their data mart 175 to find significant patterns and relationships that can be translated into marketing strategies. Using the DSS user interface process 390, the BSU 116 formulates queries and performs the necessary analysis of data in their data marts 388 to develop marketing strategies and therefrom determine what sort of marketing campaigns to implement. Queries against data in the data warehouse 382 are made using SQL or other query language.

The BSUs 116 preferably includes minicomputers or workstations, such as Sun Microsystems SC2000/SPARC20 system. Such microcomputers preferably operate under a UNIX operating system, and run a database management system such as that offered by Informix. The minicomputers (as well as other elements within the SaMS infrastructure 100) are coupled using high-bandwidth connections. For example, the minicomputers of the BSUs 116 are preferably coupled to the DSS 104 and CONI 106 using fiber-optic distributed data interface (FDDI) local-area network connections. The minicomputers preferably communicate to the infrastructure 100 using ODBC.

The BSUs 116, in the exemplary embodiment, employ a World Wide Web browser to access hypertext markup language (HTML) applications on the DSS 104 and/or CONI 106. The HTML applications provide a menu of data views and other screens, under a GUI environment (to the BSU 116), as

described herein. Thus, the BSUs 116 access portions of the SaMS Infrastructure 100 via an intranet, or via the Internet.

9. Once the BSU 116 has analyzed data and determined a marketing strategy, they use CONI 106 to implement that strategy as a marketing campaign that is targeted for a specific client segment. The campaign management process 162 and GUI 160 within CONI 106 provide the ability for the BSU 116 to state their marketing campaign as specific criteria.

10. Data input through the GUI 160 to the campaign management process 162 is converted by the campaign management process into lead qualification filters under the marketing campaign. The lead qualification filters are then input to the lead qualification filters process 164. The lead qualification filters process 164 is the interface between the data shipping process 174 of the DSS 104 and CONI 106. The lead qualification filters specify criteria that clients need to meet in order to be included in the marketing campaign.

11. The lead qualification filters process 164 extracts data from the data warehouse 172 based on criteria that represents the BSU 116's marketing campaign (under the lead qualification filter). Alternatively, the lead qualification filters process 164 applies the lead qualification filter to extract data stored in the lead marts 166.

12. Client records that meet all lead qualification filter criteria are placed in the lead marts 166 as related lead records. The lead marts 166 are CONI 106 data marts housing client records or lead records for particular marketing campaigns. From the lead records, formatted lead records will be generated (as discussed herein). There may be multiple lead marts 166, but only one record of a single client is preferably stored in one of them.

13. The lead inventory management process 164 creates a lead list based on the lead records selected by the lead qualification filter. Additionally, the lead inventory management process 164, under direction from data input from the BSU 116, creates lead distribution records that specify the number of lead records to make available for calling or mailing, specify which TM/DM centers 118 receive each lead record, specify whole numbers of lead

records to assign to each TM/DM center, etc. The BSU 116 can use the lead inventory management process 164 to specify where leads are to be sent, based on agent skill sets, geography, resources available, etc., thereby allowing the TM/DM centers 118 to manage their resources better. The lead inventory management process 164 also ensures that each client is extracted only once from all of the lead marts 166, ensuring no client duplication in various lead lists.

14. The lead inventory management process 164 feeds the lead list and associated lead records and lead distribution record for storage in the CLR 108. The CLR 108 maintains lead records for each client throughout the marketing campaign, including previous contacts and results of contacts under the feedback data flows described herein. The lead inventory management process 167 tracks leads on clients that have recently been provided to a TM/DM centers 118, to ensure frequent contacts are not made to the same client and updates lead records in the CLR 108 accordingly. For example, if a lead record on a specific client is passed to a first TM/DM center 118 on one night, and another lead record on the same client is provided to CLR 108 from the lead inventory management process 167 the next night, the lead record in CLR 108 will either indicate on the second lead record that this is a second lead record for the same client in two nights, or an indication will not pass this lead to another TM/DM center 118.

15. The DSS data harvesting process 380 collects from CARMA 102 a feed of specific data associated with or assigned to client identifiers such as name, address, and telephone numbers.

16. This specific data is placed in an operational data store (ODS) 384. The ODS 384 is similar to the data warehouse 382, but is generally much smaller. A purpose of the ODS 384 is to store data temporarily, in order to distribute data to other processes or systems.

17. and 18. Upon request by the formatter process 168, the data shipping process 386 extracts from the ODS 384 the specific data, such as the name, address, and telephone number, assigned to the client identifiers in the lead records, and provides this data to the formatter process. The formatter process 168 uses this data to assign a name and telephone number, and possibly a

mailing address, to each client identifier that was provided by the lead inventory management process 164, and create formatted lead records.

19. The formatter process 168 retrieves the lead records associated with the lead list from the CLR 108 and constructs formatted lead records using the client data provided by the data shipping process 386. Formatted lead records may include some or all of the following data: client names, telephone numbers, addresses, contact history, TM/DM centers 118 assignment, and other information pertinent to the marketing campaign. The formatter process 168 formats lead records by matching client identifiers, which are received by the lead inventory management process 164, with names and telephone numbers from CARMA 102.

20. The formatter 168 forwards the formatted lead records to the appropriate TM/DM centers 118 based on the lead distribution list. The TM/DM centers 118 import such lead records and contact the clients and conduct the marketing campaign, such as offering long distance services or products.

21. The results of each client contact are recorded locally at the TM/DM centers 118.

22. The results of each client contact are extracted by or forwarded to the contact management process 169 within CONI 106 from the TM/DM center 118. The contact management process 169 can arrange follow-up leads and report on status or results of a given campaign. The contact management process 169 may automatically update lead records stored within the CLR 108.

23. The contact management process 169 provides results of client contacts to the data harvesting process 380, so that the data warehouse 382 can be updated with these results. The data shipping process 386 then updates the corresponding data in the data marts 175. This represents another of many feedback loops built into the SaMS infrastructure 100. As noted above, the BSU 116 formulates and conducts a marketing campaign. The results of each client contact under the campaign are fed to the data warehouse 382. The BSU 116 can then extract and analyze the results of the overall campaign by specifying to the data shipping process 386 an extraction of certain client data. From this, the

BSU 116 may formulate another campaign, modify an existing campaign, or identify an unexpected response to the previous campaign.

For example, the BSU 116 may formulate a campaign to sell long distance service to a certain RBOC's customers. Many customers, when contacted by a TM/DM center, may respond with a preference to switch local service providers. These responses are recorded in the CLR 108, extracted by the contact management process 169, collected by the data harvesting process 380, and stored in the data warehouse 382. The BSU 116 then analyzes the results of their campaign via the DSS user interface process 390 and previously updated data marts, and determines that a local service marketing campaign to those same customers is needed.

The TM/DM centers 118 can also perform direct mail campaigns. For example, CONI 106 can instruct the TM/DM center 118 to mail brochures to selected clients, wait two weeks, then call those clients.

24. The result of a client contact may be that the client requests to not be called again (a "suppression"). As noted above with respect to data flow 22, the contact management process 169 updates the lead records in the CLR 108 to indicate a suppression for the client. An extraction of all suppressions are then fed, as a Data Provider, to CARMA 102. CARMA 102 in turn will feed these suppressions, by client identifier only, to the data warehouse 382. The lead qualification filter process 164 can then filter out any clients with a suppression indicator in future campaigns. Suppressions can also be provided to CARMA 102 from External Data Sources 114, such as a LEC 124.

While the present invention has been described with reference to a preferred embodiment thereof, those skilled in the art will appreciate that various changes in form and detail may be made without departing from the intended scope of the present invention as defined in the appended claims.

CLAIMS

1. An automated marketing system, comprising a client profile management system for managing client profiles that contain information about clients for marketing contact;

a data warehouse system for storing data regarding clients; and

a contact infrastructure for querying the data warehouse to automatically generate leads of clients to contact by telemarketers wherein the querying entails filtering data in the data warehouse to ensure that the generated leads are for clients that include certain characteristics.

2. The automated marketing system of claim 1 wherein the client profile management system includes a client profile database and a database management system.

3. The automated marketing system of claim 1 wherein the client profiles include a client profile that specifies multiple phone numbers for a client.

4. The automated marketing system of claim 1 wherein the client profiles include a client profile that specifies multiple addresses for a client.

5. The automated marketing system of claim 1 wherein at least one of the clients is a business.

6. The automated marketing system of claim 1 wherein the client profiles include a first client profile for a first client and a second client profile for a second client and wherein the first client and the second client share a single telephone number that is stored in both the first client profile and in the second client profile.

7. The automated marketing system of claim 1 wherein the client profiles include a first client profile for a first client and a second client profile for a second client and wherein the first client and the second client share a single

residential address that is stored in both the first client profile and in the second client profile.

8. The automated marketing system of claim 1, further comprising a feedback mechanism for feeding results of contacting clients to the data warehouse and the client profile management system.

9. The automated marketing system of claim 8, further comprising a suppression mechanism for suppressing a selected client from being designated as a lead in response to results of contacting the selected client.

10. The automated marketing system of claim 1, further comprising an automated order provisioning system for provisioning orders in response to an order resulting from a telemarketing contact.

11. The automated marketing system of claim 1, further comprising a delivery mechanism for delivering the generated leads to at least one telemarketing center that has telemarketers.

12. In an automated marketing system having stored data regarding potential clients, a computer-implemented method, comprising the steps of:

providing a lead generator for generating leads of potential clients to contact by telemarketers from the stored client data;

using the lead generator to generate leads for a first marketing campaign;

obtaining results of contacting the generated leads; and

using the obtained results to generate leads by the lead generator for a second marketing campaign.

13. The method of claim 11 wherein the obtained results are used to suppress at least one client so that the client does not appear among the generated leads.

14. The method of claim 11 wherein the obtained results indicate whether a contacted client made a purchase in response to being contacted.

15. In an automated marketing system, a method comprising the computer-implemented steps of:

providing client information regarding potential clients for telemarketing contact on a per-client basis;

querying the client information to generate a list of leads for telemarketing contact, each lead being associated with a potential client and containing contact information for the potential client that fulfills a first set of characteristics; and

forwarding the leads to telemarketers.

16. The method of claim 15, further comprising the steps of receiving new data from multiple data providers in multiple formats and integrating the new data with the provided client information to update the provided client information.

17. The method of claim 15, further comprising the steps of receiving results of contacting the associated potential clients of the leads and storing the results with the provided client information.

18. The method of claim 15 wherein the system includes a data warehouse and at least some of the client information is stored in the data warehouse.

19. The method of claim 15, further comprising the step of again querying the client information to generate another list of leads for telemarketing contact, each lead being associated with a potential client and containing contact information for the potential client that fulfills a second set of characteristics.

20. The method of claim 15 suppressing leads for a potential client that fulfill the first set of characteristics from the list of leads.

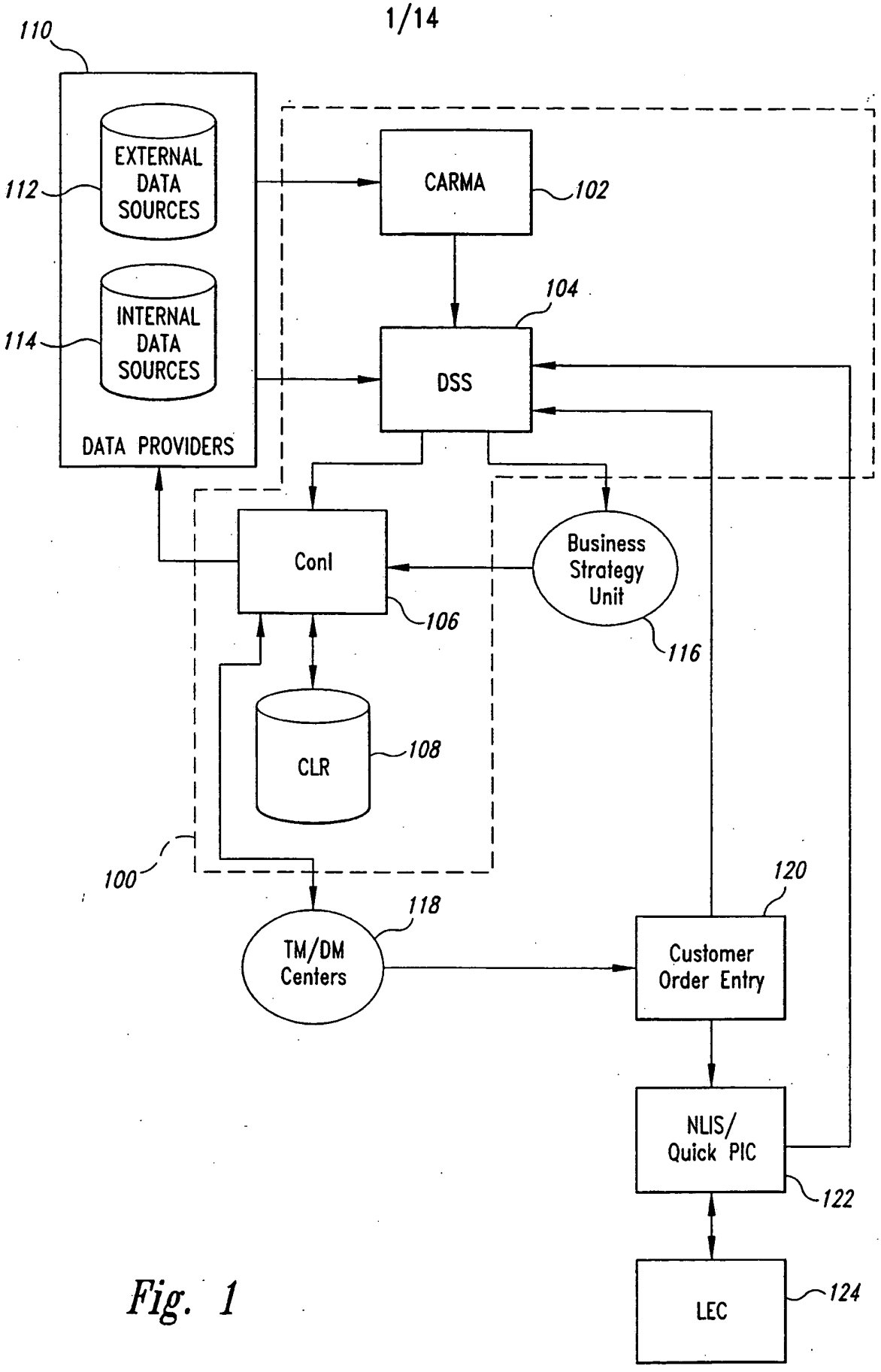

110
EXTERNAL DATA SOURCES
112
INTERNAL DATA SOURCES
114
DATA PROVIDERS
CARMA
102
104
DSS
Conl
106
Business Strategy Unit
116
CLR
108
100
118
TM/DM Centers
120
Customer Order Entry
NLIS/ Quick PIC
122
LEC
124

Fig. 1

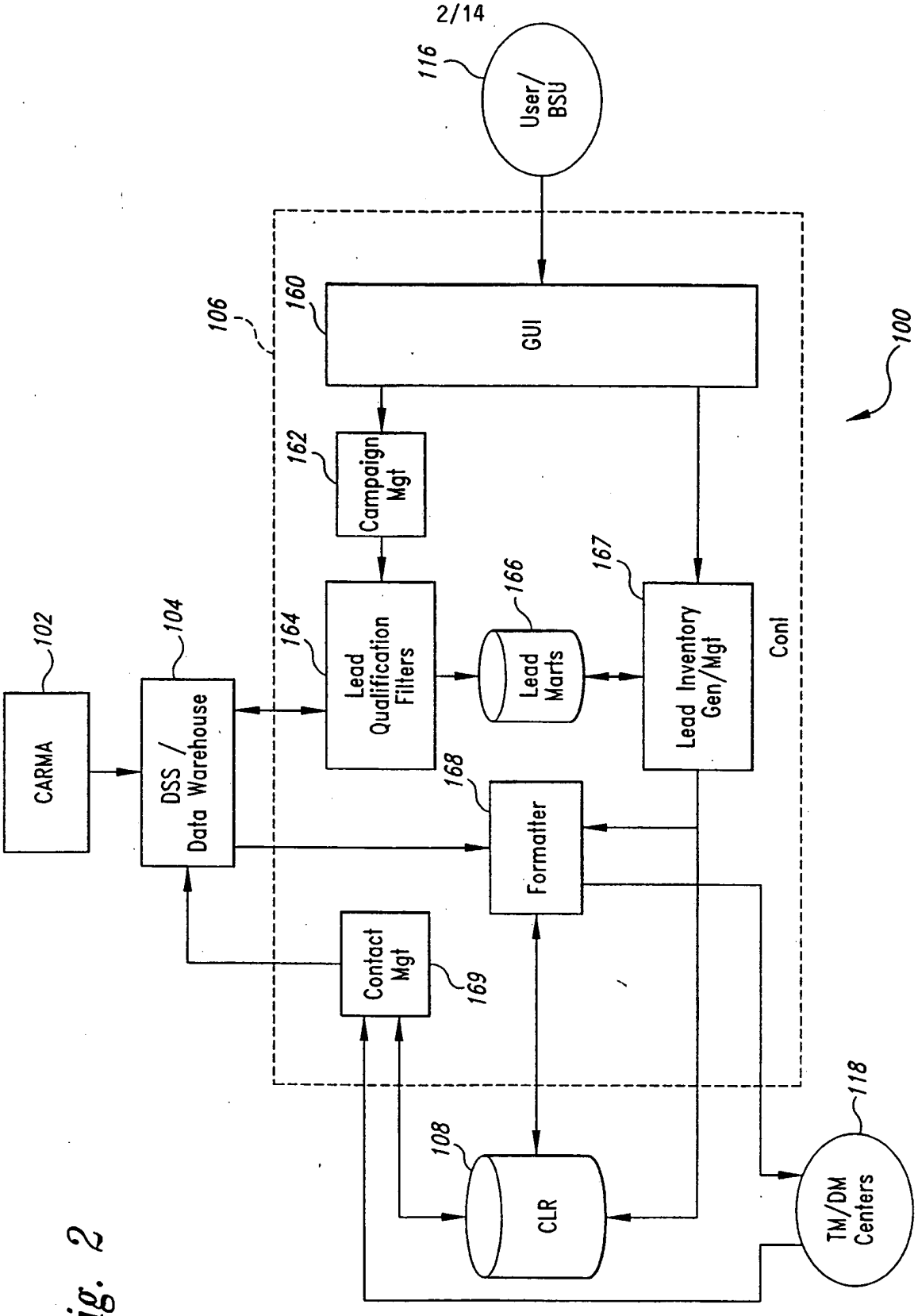
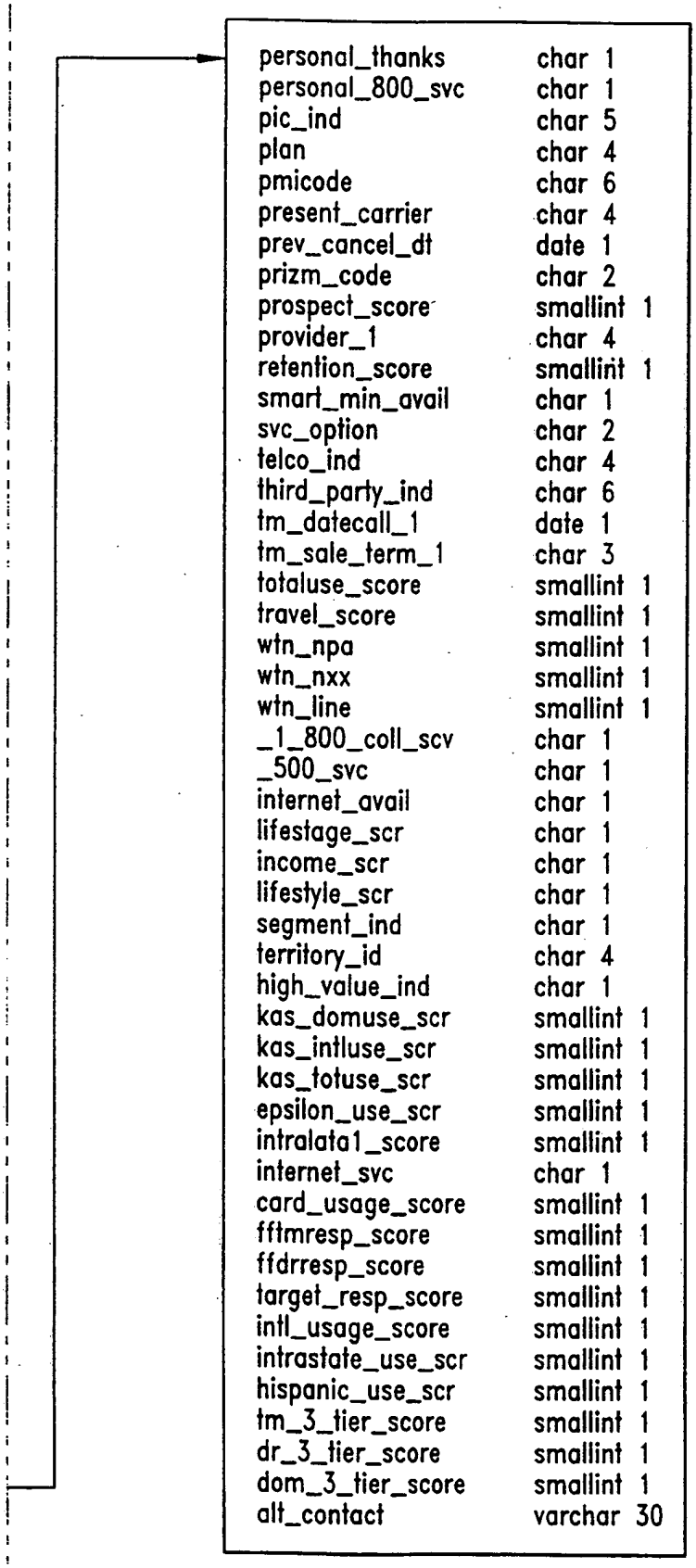

User/ BSU
116
GUI
160
106
100
Campaign Mgt
162
Lead Qualification Filters
164
Lead Marts
166
Lead Inventory Gen/Mgt
167
Conl
CARMA
102
DSS / Data Warehouse
104
Formatter
168
Contact Mgt
169
CLR
108
TM/DM Centers
118

Fig. 2

leadrec_key	char 12
clnt_id	int 1
clnt_id_type	char 1
btn_npa	smallint 1
btn_nxx	smallint 1
btn_line	smallint 1
adr_id	int 1
account	char 8
account_status	char 1
acct_inst_date	date 1
adr_status	char 1
bill_cycle	char 2
business_anly_ind	char 1
calling_card_svc	char 1
call_zone	smallint 1
cancel_date	date 1
cancel_reason	char 2
cellular_interest	char 1
cellular_msa	char 3
cellular_svc	char 1
clnt_type	char 1
cust_adr1	varchar 30
cust_adr2	varchar 30
cust_city	varchar 25
cust_state	char 2
cust_zip	char 9
customer_name	varchar 30
deceased_flag	char 1
dom_dol_c	char 1
dom_dol	int 1
domuse_score	smallint 1
fgb_dom_min_c	char 1
fgb_dom_min	int 1
fgb_intl_min_c	char 1
fgb_intl_min	int 1
fgb_intl_dol_c	char 1
fgb_intl_dol	int 1
fgb_dol_c	char 1
fgb_dol	int 1
fgd_dom_min_c	char 1
fgd_dom_min	int 1
fgd_intl_min_c	char 1
fgd_intl_min	int 1
fgd_intl_dol_c	char 1
fgd_intl_dol	int 1
fgd_dol_c	char 1
fgd_dol	int 1
fgd_mkt_strgty	char 1

install_date	date 1
fgd_cancel_date	date 1
inbound_country	char 3
inbound_intl_min_c	char 1
interlata_pic_frz	char 1
interlata_svc	char 1
intl_dol	int 1
intl_dol_c	char 1
intl_lang_value	char 2
intl_score_lang	char 1
intl_tm_score	smallint 1
interstate_min_c	char 1
interstate_min	int 1
interstate_dol_c	char 1
interstate_dol	int 1
intralata_pitch	char 1
card_pitch	char 1
pager_pitch	char 1
cellular_pitch	char 1
internet_pitch	char 1
interlata_pitch	char 1
intl_call_pitch	char 1
report_spend	int 1
local_interest	char 1
internet_interest	char 1
pager_interest	char 1
contact_cust	char 1
last_rep_ssn	int 1
tech_affl_family	char 1
united_artist_ind	char 1
intralata_svc	char 1
intrastate_min_c	char 1
intrastate_min	int 1
intrastate_dol_c	char 1
intrastate_dol	int 1
invoice_amount	int 1
jurisdiction_ind	char 1
language	char 1
last_date_called	date 1
last_term_code	char 3
line_size	int 1
listcode	char 6
lst_invoice_month	smallint 1
membership_id	varchar 26
niche_code	char 3
outbnd_country	char 3
pager_svc	char 1
pay_method	smallint 1

Fig. 3A



personal_thanks	char 1
personal_800_svc	char 1
pic_ind	char 5
plan	char 4
pmicode	char 6
present_carrier	char 4
prev_cancel_dt	date 1
prizm_code	char 2
prospect_score	smallint 1
provider_1	char 4
retention_score	smallint 1
smart_min_avail	char 1
svc_option	char 2
telco_ind	char 4
third_party_ind	char 6
tm_datecall_1	date 1
tm_sale_term_1	char 3
totaluse_score	smallint 1
travel_score	smallint 1
wtn_npa	smallint 1
wtn_nxx	smallint 1
wtn_line	smallint 1
_1_800_coll_scv	char 1
_500_svc	char 1
internet_avail	char 1
lifestage_scr	char 1
income_scr	char 1
lifestyle_scr	char 1
segment_ind	char 1
territory_id	char 4
high_value_ind	char 1
kas_domuse_scr	smallint 1
kas_intluse_scr	smallint 1
kas_totuse_scr	smallint 1
epsilon_use_scr	smallint 1
intralata1_score	smallint 1
internet_svc	char 1
card_usage_score	smallint 1
fftmresp_score	smallint 1
ffdrresp_score	smallint 1
target_resp_score	smallint 1
intl_usage_score	smallint 1
intrastate_use_scr	smallint 1
hispanic_use_scr	smallint 1
tm_3_tier_score	smallint 1
dr_3_tier_score	smallint 1
dom_3_tier_score	smallint 1
alt_contact	varchar 30

Fig. 3B

event_id	int 1
clnt_id	int 1
clnt_id_type	char 1
division	int 1
btn_npa	smallint 1
btn_nxx	smallint 1
btn_line	smallint 1
adr_id	int 1
channel_ind	char 1
sales_city	char 3
form_name	char 4
app_code	char 3
camp_code	char 3
company_code	char 3
product_code	char 3
inserted_by	char 1
date_in_clr	date 1
date_to_distrib	date 1
date_sent	date 1
date_del_sent	date 1
eventid_deltr	int 1
date_contacted	date 1
contact_processed	date 1
term_code	char 3
priority	int 1
highvalue	char 1
territory	char 4

Lead Distribution Record

Fig. 4

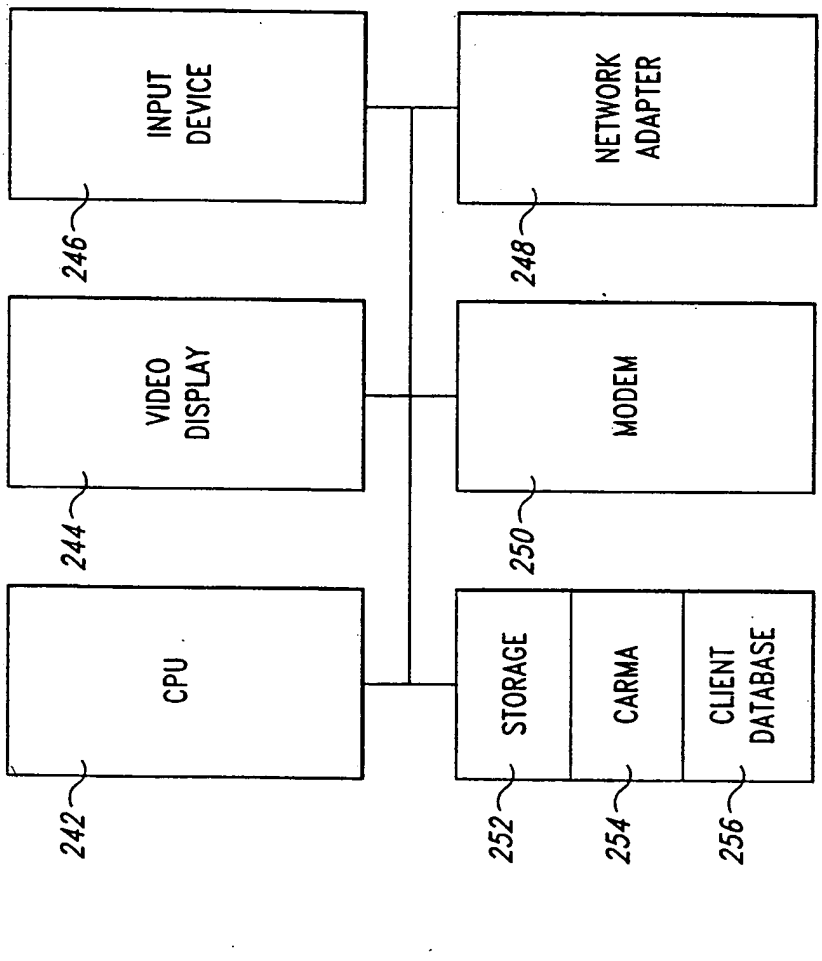

INPUT DEVICE
246
NETWORK ADAPTER
248
VIDEO DISPLAY
244
MODEM
250
CPU
242
STORAGE
252
CARMA
254
CLIENT DATABASE
256
240

Fig. 5

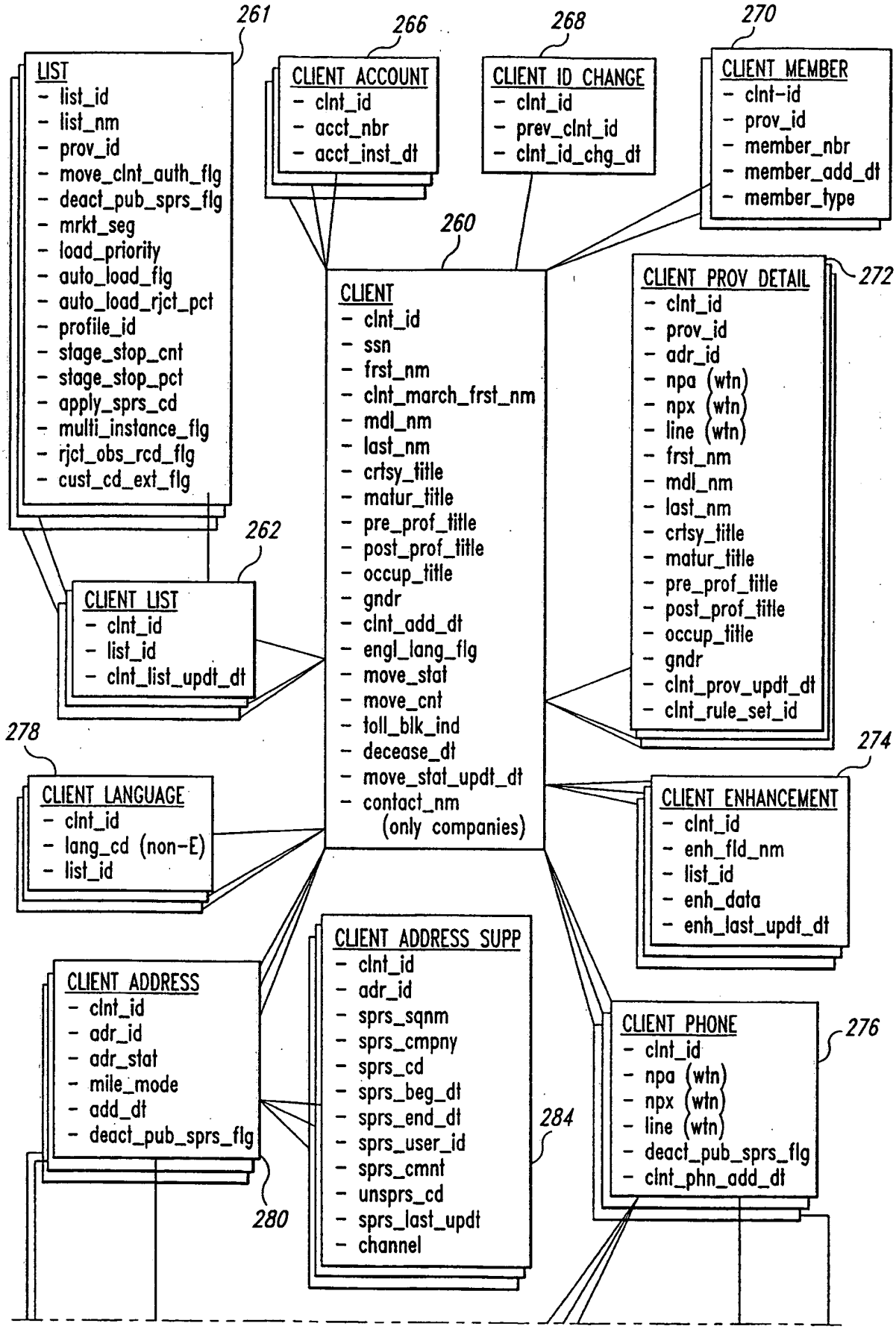

261
LIST
- list_id
- list_nm
- prov_id
- move_clnt_auth_flg
- deact_pub_sprs_flg
- mrkt_seg
- load_priority
- auto_load_flg
- auto_load_rjct_pct
- profile_id
- stage_stop_cnt
- stage_stop_pct
- apply_sprs_cd
- multi_instance_flg
- rjct_obs_rcd_flg
- cust_cd_ext_flg
266
CLIENT ACCOUNT
- clnt_id
- acct_nbr
- acct_inst_dt
268
CLIENT ID CHANGE
- clnt_id
- prev_clnt_id
- clnt_id_chg_dt
270
CLIENT MEMBER
- clnt-id
- prov_id
- member_nbr
- member_add_dt
- member_type
260
CLIENT
- clnt_id
- ssn
- frst_nm
- clnt_march_frst_nm
- mdl_nm
- last_nm
- crtsy_title
- matur_title
- pre_prof_title
- post_prof_title
- occup_title
- gndr
- clnt_add_dt
- engl_lang_flg
- move_stat
- move_cnt
- toll_blk_ind
- decease_dt
- move_stat_updt_dt
- contact_nm
(only companies)
272
CLIENT PROV DETAIL
- clnt_id
- prov_id
- adr_id
- npa (wtn)
- npx (wtn)
- line (wtn)
- frst_nm
- mdl_nm
- last_nm
- crtsy_title
- matur_title
- pre_prof_title
- post_prof_title
- occup_title
- gndr
- clnt_prov_updt_dt
- clnt_rule_set_id
262
CLIENT LIST
- clnt_id
- list_id
- clnt_list_updt_dt
278
CLIENT LANGUAGE
- clnt_id
- lang_cd (non-E)
- list_id
274
CLIENT ENHANCEMENT
- clnt_id
- enh_fld_nm
- list_id
- enh_data
- enh_last_updt_dt
CLIENT ADDRESS SUPP
- clnt_id
- adr_id
- sprs_sqnm
- sprs_cmpny
- sprs_cd
- sprs_beg_dt
- sprs_end_dt
- sprs_user_id
- sprs_cmnt
- unsprs_cd
- sprs_last_updt
- channel
284
CLIENT ADDRESS
- clnt_id
- adr_id
- adr_stat
- mile_mode
- add_dt
- deact_pub_sprs_flg
280
CLIENT PHONE
- clnt_id
- npa (wtn)
- npx (wtn)
- line (wtn)
- deact_pub_sprs_flg
- clnt_phn_add_dt
276

Fig. 6A

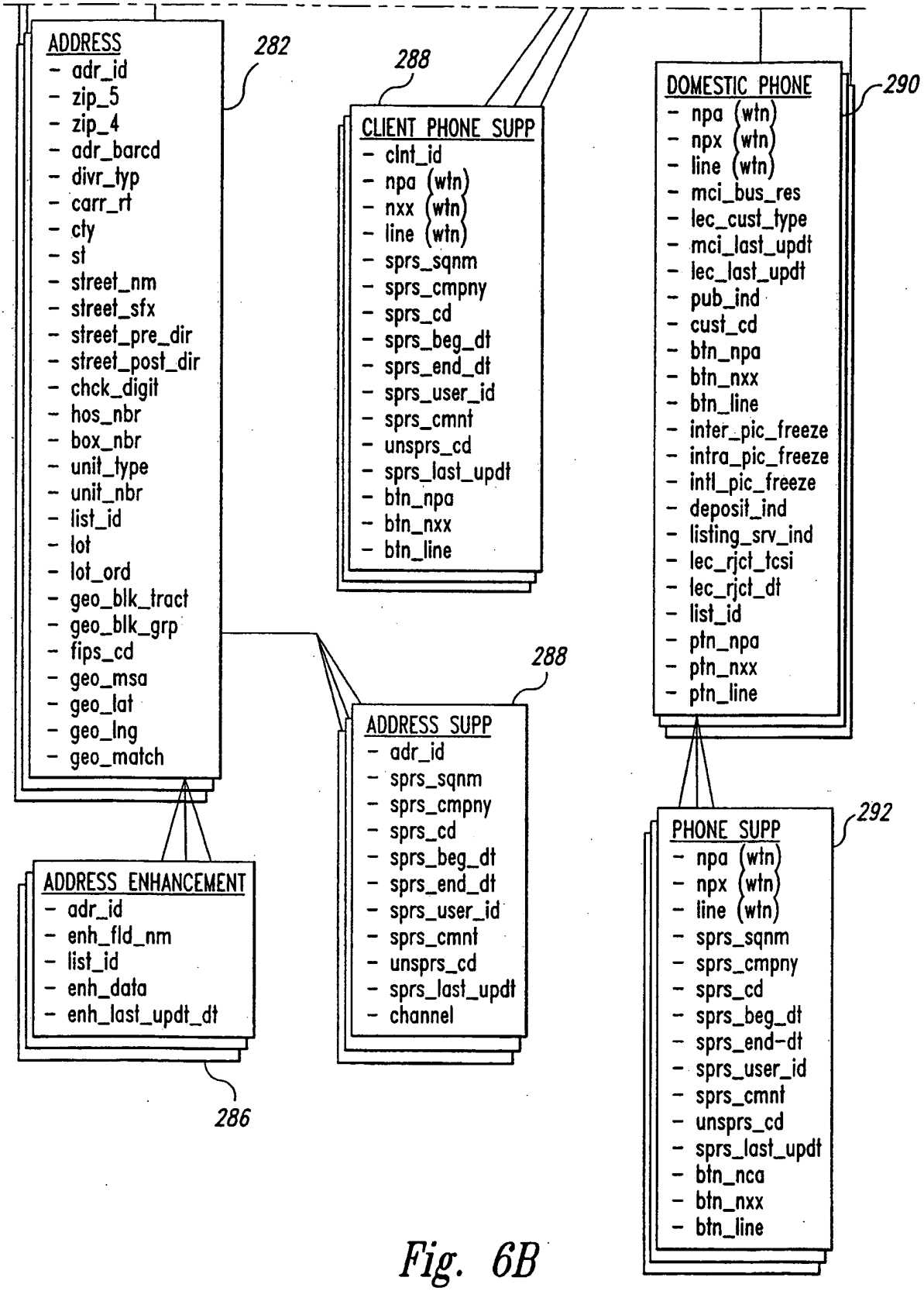

ADDRESS
- adr_id
- zip_5
- zip_4
- adr_barcd
- divr_typ
- carr_rt
- cty
- st
- street_nm
- street_sfx
- street_pre_dir
- street_post_dir
- chck_digit
- hos_nbr
- box_nbr
- unit_type
- unit_nbr
- list_id
- lot
- lot_ord
- geo_blk_tract
- geo_blk_grp
- fips_cd
- geo_msa
- geo_lat
- geo_lng
- geo_match
282
CLIENT PHONE SUPP
- clnt_id
- npa (wtn)
- nxx (wtn)
- line (wtn)
- sprs_sqnm
- sprs_cmpny
- sprs_cd
- sprs_beg_dt
- sprs_end_dt
- sprs_user_id
- sprs_cmnt
- unsprs_cd
- sprs_last_updt
- btn_npa
- btn_nxx
- btn_line
288
DOMESTIC PHONE
- npa (wtn)
- npx (wtn)
- line (wtn)
- mci_bus_res
- lec_cust_type
- mci_last_updt
- lec_last_updt
- pub_ind
- cust_cd
- btn_npa
- btn_nxx
- btn_line
- inter_pic_freeze
- intra_pic_freeze
- intl_pic_freeze
- deposit_ind
- listing_srv_ind
- lec_rjct_tcsi
- lec_rjct_dt
- list_id
- ptn_npa
- ptn_nxx
- ptn_line
290
ADDRESS SUPP
- adr_id
- sprs_sqnm
- sprs_cmpny
- sprs_cd
- sprs_beg_dt
- sprs_end_dt
- sprs_user_id
- sprs_cmnt
- unsprs_cd
- sprs_last_updt
- channel
288
ADDRESS ENHANCEMENT
- adr_id
- enh_fld_nm
- list_id
- enh_data
- enh_last_updt_dt
286
PHONE SUPP
- npa (wtn)
- npx (wtn)
- line (wtn)
- sprs_sqnm
- sprs_cmpny
- sprs_cd
- sprs_beg_dt
- sprs_end-dt
- sprs_user_id
- sprs_cmnt
- unsprs_cd
- sprs_last_updt
- btn_nca
- btn_nxx
- btn_line
292

Fig. 6B

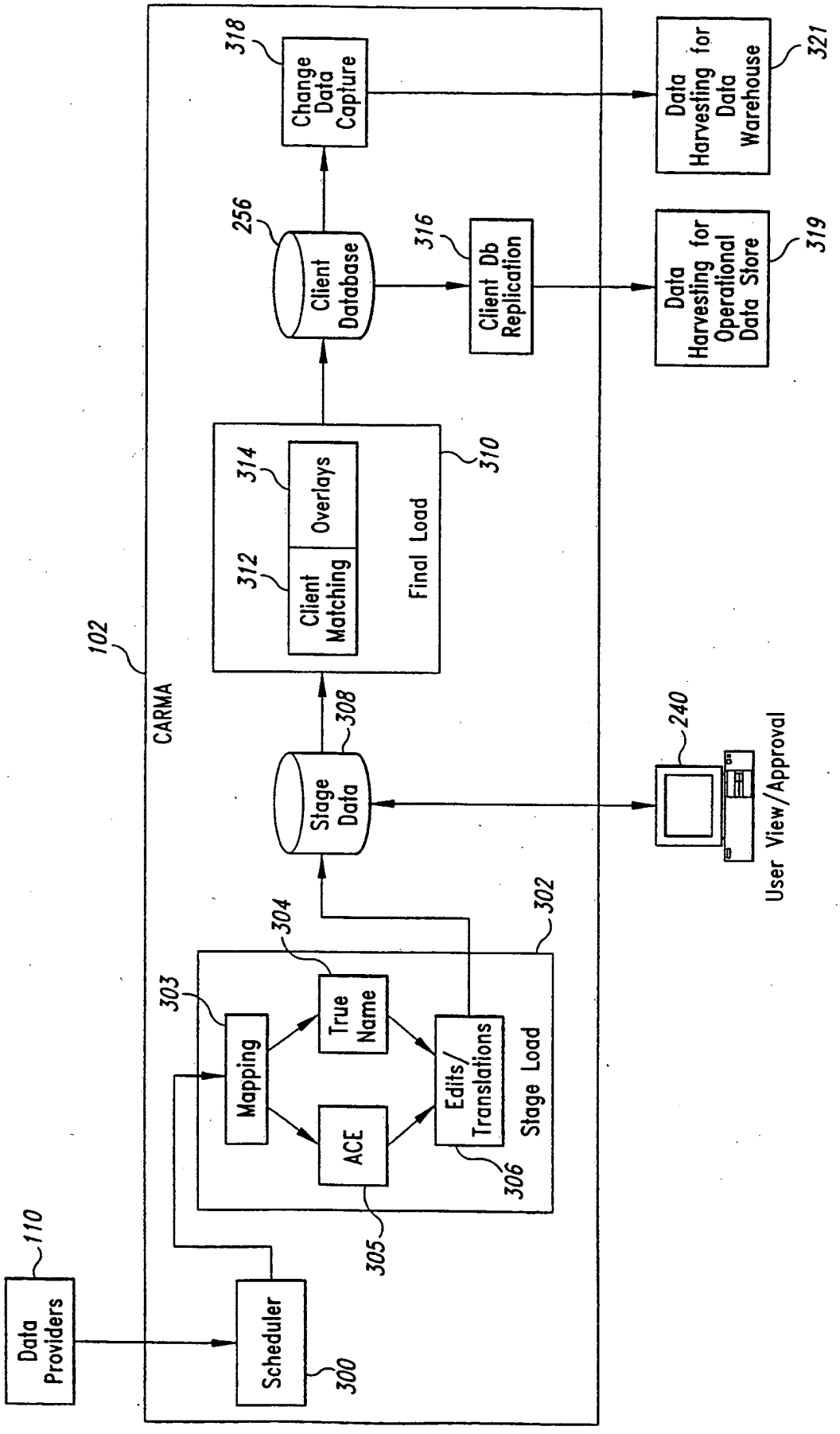

Data Providers
110
Scheduler
300
CARMA
102
Mapping
303
True Name
304
ACE
305
Edits/ Translations
306
Stage Load
302
Stage Data
308
User View/Approval
240
Client Matching
312
Overlays
314
Final Load
310
Client Database
256
Client Db Replication
316
Change Data Capture
318
Data Harvesting for Operational Data Store
319
Data Harvesting for Data Warehouse
321

Fig. 7

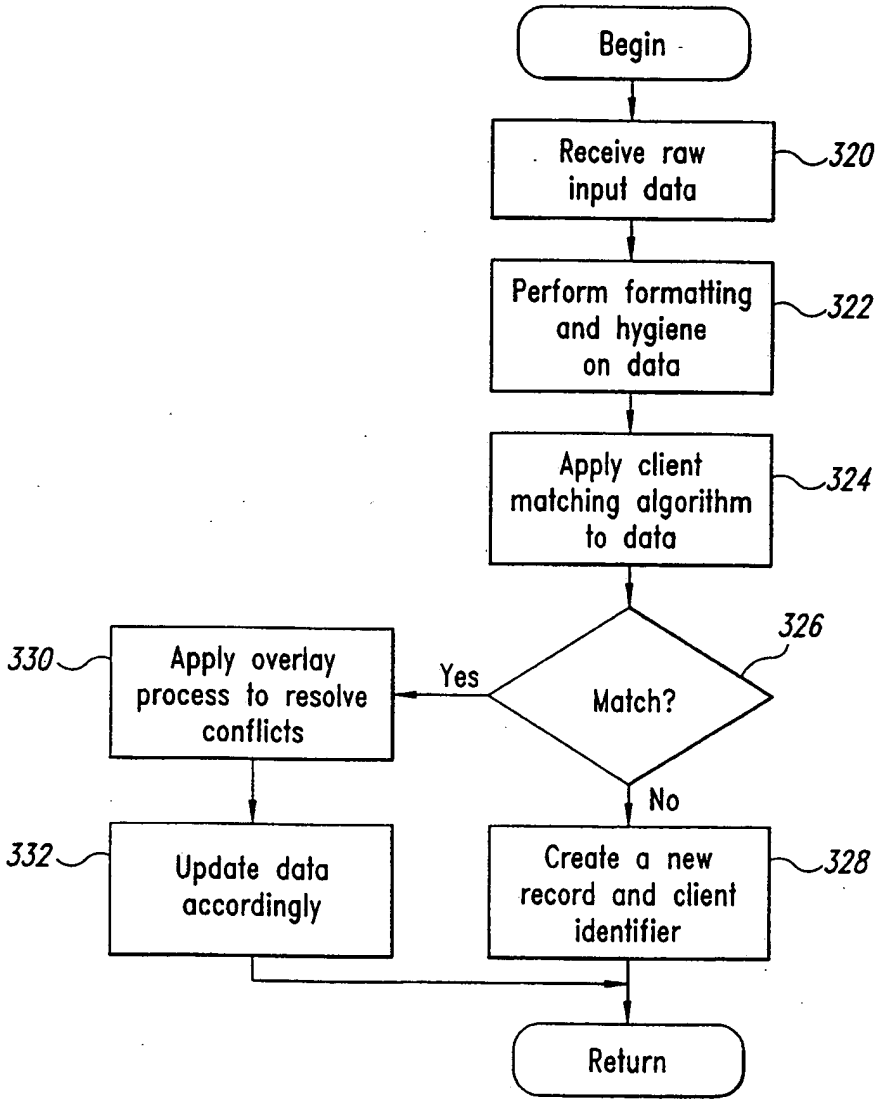

Begin
Receive raw input data
320
Perform formatting and hygiene on data
322
Apply client matching algorithm to data
324
Match?
326
Yes
No
Apply overlay process to resolve conflicts
330
Update data accordingly
332
Create a new record and client identifier
328
Return

Fig. 8

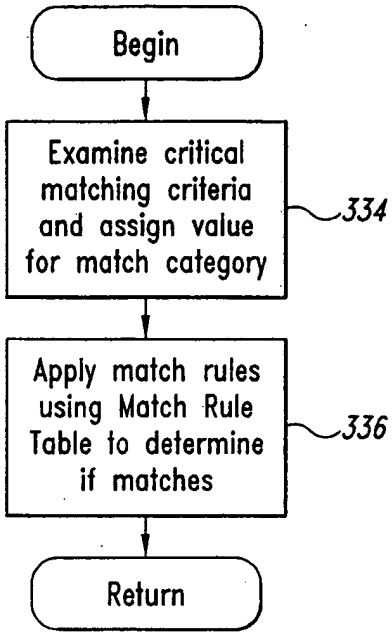

Begin
Examine critical matching criteria and assign value for match category
334
Apply match rules using Match Rule Table to determine if matches
336
Return

Fig. 9

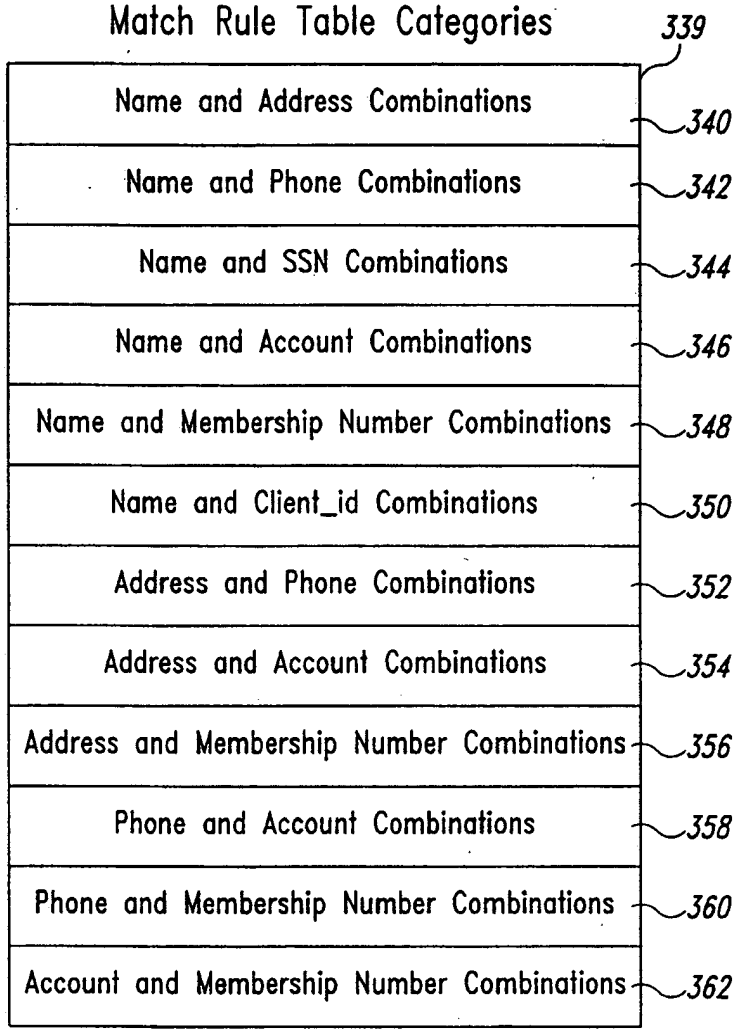

Match Rule Table Categories
339
Name and Address Combinations
340
Name and Phone Combinations
342
Name and SSN Combinations
344
Name and Account Combinations
346
Name and Membership Number Combinations
348
Name and Client_id Combinations
350
Address and Phone Combinations
352
Address and Account Combinations
354
Address and Membership Number Combinations
356
Phone and Account Combinations
358
Phone and Membership Number Combinations
360
Account and Membership Number Combinations
362

Fig. 10

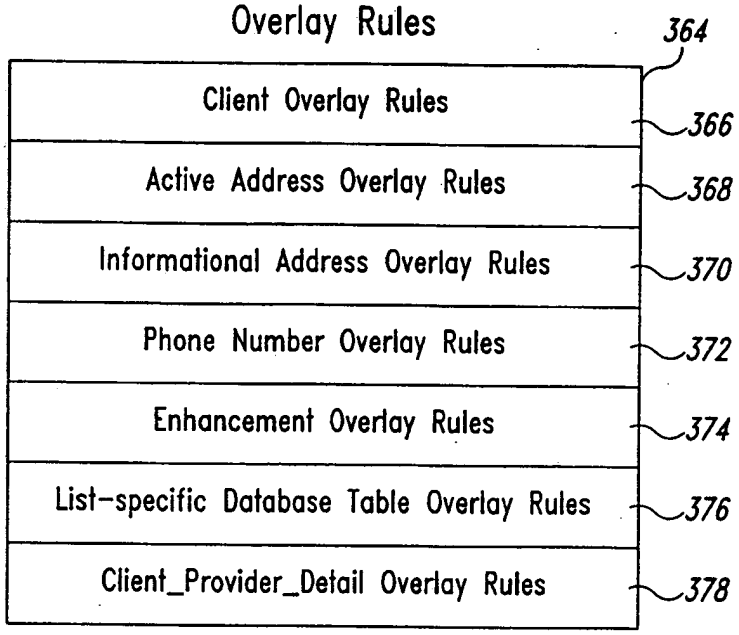

Overlay Rules
364
Client Overlay Rules
366
Active Address Overlay Rules
368
Informational Address Overlay Rules
370
Phone Number Overlay Rules
372
Enhancement Overlay Rules
374
List-specific Database Table Overlay Rules
376
Client_Provider_Detail Overlay Rules
378

Fig. 11

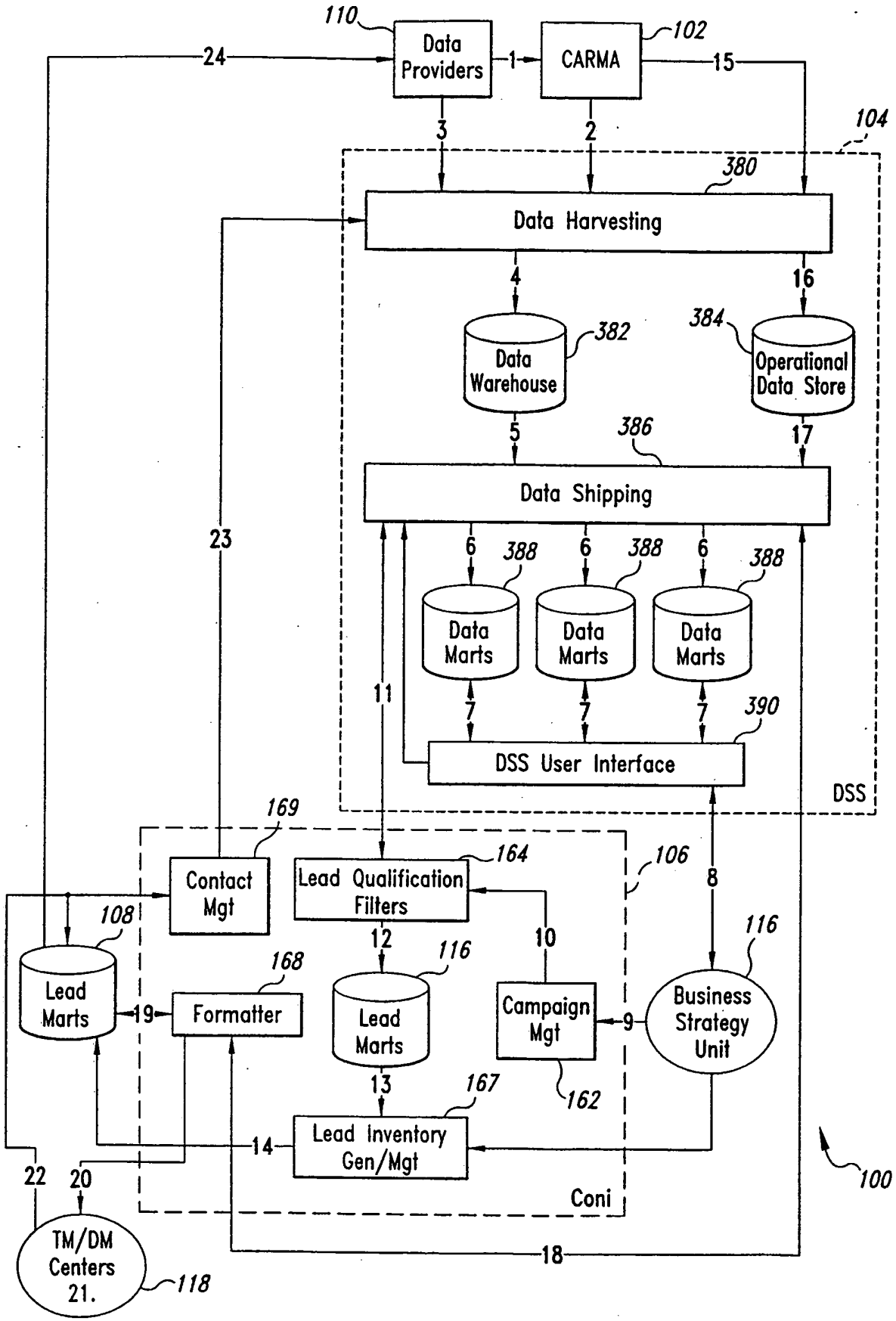

110
Data Providers
102
CARMA
24
1
15
3
2
104
380
Data Harvesting
4
16
382
Data Warehouse
384
Operational Data Store
5
386
17
Data Shipping
23
6
388
6
388
6
388
Data Marts
Data Marts
Data Marts
11
7
7
7
390
DSS User Interface
DSS
169
164
106
Contact Mgt
Lead Qualification Filters
8
108
12
10
116
168
116
Lead Marts
19
Formatter
Lead Marts
Campaign Mgt
9
Business Strategy Unit
13
167
162
Lead Inventory Gen/Mgt
14
22
20
100
Coni
TM/DM Centers 21.
118
18

Fig. 12

INTERNATIONAL SEARCH REPORT

In ational Application No
PCT/US 98/08030

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 G06F17/60

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 6 G06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DOUGLASS D P: "Building marketing information systems" I/S ANALYZER, USA, vol. 28, no. 4, April 1990, ISSN 0896-3231, pages 1-12, 16, XP002072346	1,2,5, 8-20
Y	see page 4 ---	6,7
X	WO 97 15023 A (CITIBANK) 24 April 1997 see page 60, line 10 - page 62, line 24 see page 24, line 7 - line 14 ---	1,12,15
	-/--	

[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
22 July 1998	05/08/1998

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Pottiez, M

1

Form PCT/ISA/210 (second sheet) (July 1992)

INTERNATIONAL SEARCH REPORT

In ıtional Application No
PCT/US 98/08030

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication,where appropriate, of the relevant passages	Relevant to claim No.
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INTERNATIONAL SEARCH REPORT

Information on patent family members

In ational Application No
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